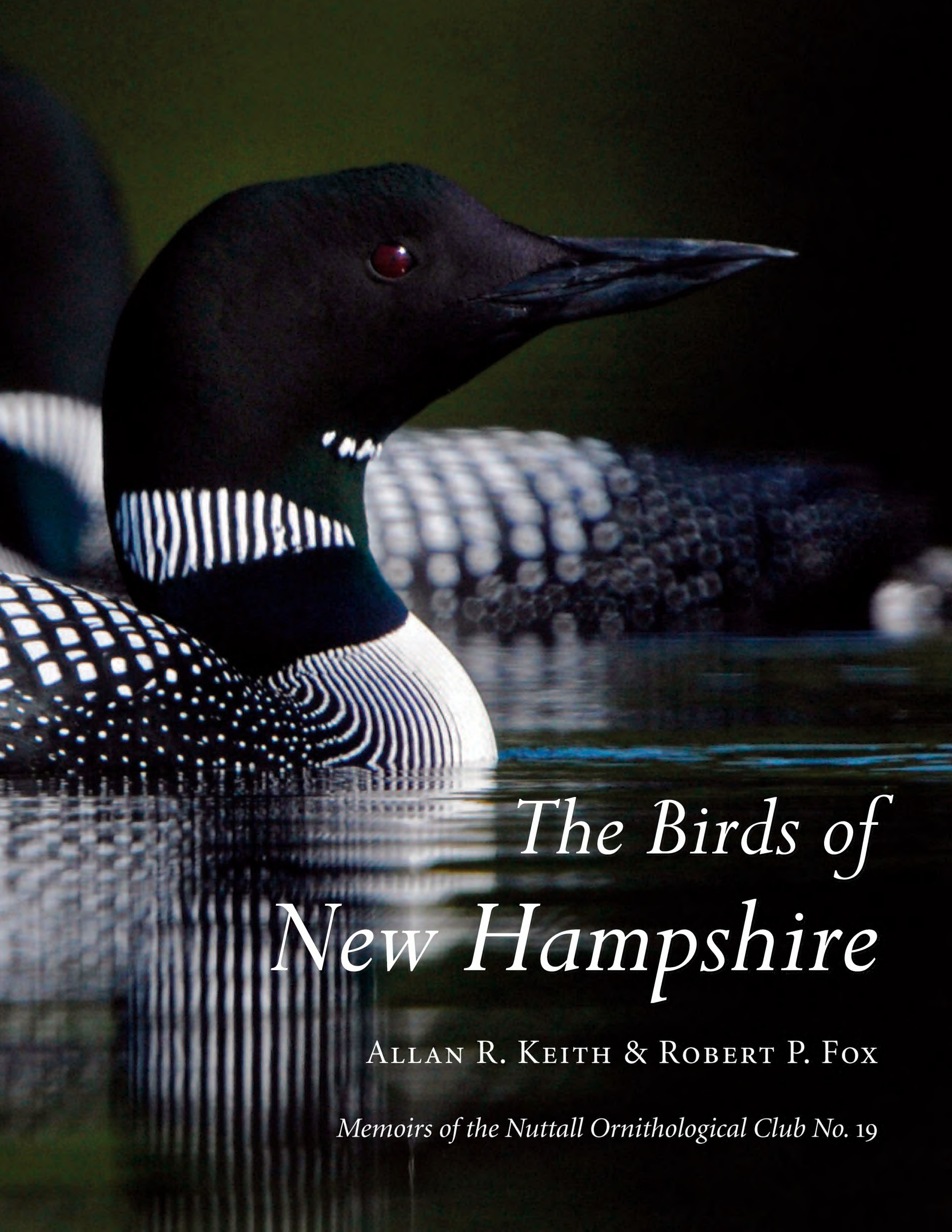




*The Birds of
New Hampshire*

ALLAN R. KEITH & ROBERT P. FOX

Memoirs of the Nuttall Ornithological Club No. 19

The Birds of New Hampshire

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New Hampshire*

by

ALLAN R. KEITH & ROBERT P. FOX



The Audubon Society of New Hampshire congratulates Allan Keith and Robert Fox on the completion of *The Birds of New Hampshire* after decades of dedicated effort. This historic compilation of records of bird sightings within the State provides an invaluable resource for anyone interested in the dynamic world of bird distribution and abundance.



The New Hampshire Fish and Game Department congratulates the Nuttall Ornithological Club on the publication of an important new book, *The Birds of New Hampshire*, that covers 200 years of information about the Granite State's avian fauna. We hope students, researchers and wildlife managers find this to be a valuable resource for many years to come.



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ISBN: 978-1-877973-47-5

Dedication

The authors want to express their appreciation and admiration to the following four people who, collectively and individually through example and leadership, raised bird study in New Hampshire to a new level and served as role models for the next generation of field birders.

Kimball C. Elkins

Vera H. Hebert

Tudor Richards

Robert W. Smart

The authors also want to express their gratitude to the following organizations and individuals who supported the publication of this book by their most generous contributions which have been significant in bringing this book to fruition.

The Stannard and Dorothy Dunn Charitable Trust

The Butler Foundation

H. Cook Anderson

Caswell Foundation

David B. Donsker

Peter R. Stettenheim

Brown Monson Foundation

Stettenheim Foundation

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Foreword

YESTERDAY I went to look for a meadowlark, apparently on territory in some nearby fields, a little farther afield than my normal stomping grounds here in central New Hampshire. Having a potentially nesting meadowlark in our region represents a pretty big deal nowadays. It doesn't appear that our meadow habitats have changed all that much over the past few decades, and yet for reasons that remain unclear, meadowlark populations—a bird which as recently as the 1970s was widespread if not exactly common as a breeder—have crashed. Other meadow birds, birds such as the Bobolink and Savannah Sparrow, seem to have held their own relatively well, though as always they are vulnerable to early mowing. But the Eastern Meadowlark, with its incomparably lovely song, seems basically to have disappeared. Why?

Questions like that are not addressed or answered in this book. What this book does do, and admirably, is establish in considerable detail what the current status of New Hampshire's birds is, and put that information into historical context. This information then informs research and conservation questions, now and going forward. Somewhat surprisingly, this has never really been done for the Granite State, and one has to wish it had been. How much do we wish we had more details regarding the number of nesting Upland Sandpipers back in 1900—we know there were a lot more than there are now, but how many more? At least now, a hundred years in the future, researchers will be able to access that information, summaries here in this book and more details in data sets elsewhere. It will be invaluable.

For change is inevitable. The past several centuries here in New Hampshire have seen the landscape go from one that was primarily forested (albeit some was apparently torched pretty regularly by aboriginal communities), to one that was primarily rough grassland maintained by herds of sheep and other grazing animals some 150 years ago, to one that has reverted back to forest, New Hampshire now being one of the most forested states in the nation. The composition of our avifauna has changed in sync with the changes in dominant habitats, with overall numbers of certain species rising, that of others falling, in an endlessly fascinating and complex series of shifts. Who, thirty or forty years ago with hordes of them gorging on sunflower seeds at their wintertime feeders, would have imagined that the Evening Grosbeak would decline to the point where it is a scarce summer breeding resident and hardly present at all in winter? Who would have imagined that there could possibly be so many Wild Turkeys and Canada Geese, and so few warblers generally? Who could have imagined that a few Mississippi Kites would be nesting in our state? Or Fox Sparrows?

Books like this help to establish a baseline for future reference. And those baselines are changing, at a pace that we with our human lifespans often have a hard time appreciating. The term of "shifting baseline" is sometimes used to describe such situations, one in which our collective knowledge has changed dramatically but we aren't even really aware of the change. We no longer think of the absence of Passenger Pigeons, and yet 200 years ago they were a dominant bird here, at least in summer. By the same token, but in the other direction, our expectation, the norm, is that Turkey Vultures will be widespread and fairly common in summer whereas fifty years ago there were next to none. On and on, in an endless series of shifts and changes, shifts and changes that now seem likely only to accelerate given the anticipated pace of global warming and the very different future that awaits our birds, and the birders who will be seeking them, and will always, I hope, be curious about them.

At least in the future scientists and birders will have this carefully researched volume to look back to. Putting together a book such as this is no easy task: it requires grit and determination to see it through, as so well I know from personal experience! My friends Allan and Bob labored for several decades to bring their text to where it is now, giving us a succinct snapshot of each of New Hampshire's bird species. I'm convinced its value will only grow with time. I can only hope that another hundred years from now there will be another pair of indefatigable bird enthusiasts willing to assemble an equally good summary of our birds. Their job will, however, have been made immeasurably easier by having this book as their baseline.

Robert S. Ridgely, PhD
President, World Land Trust-US

And by the way, I didn't manage to see the meadowlarks at that lovely farm in Campton.
But you can bet I will return.

Acknowledgements

A GREAT many people made very significant contributions to this volume. Literally hundreds of people provided the reports on which this book is based and the value of their input cannot be overemphasized. They are too numerous to mention here by name, but nearly all such reports are credited to the individual observers in the text of the species accounts. To all those who submitted records we extend our thanks.

The guts of this book are clearly the species accounts. Since neither of the authors have ever lived full time in the state, it was necessary to have the cooperation of the most active and knowledgeable field observers available to refine and add precision to the over 550 pages of draft the authors originally wrote. In effect, these volunteers fulfilled the role of peer reviewers for the species accounts and without their efforts and assistance, the book would be much the poorer. These heroes deserve first mention and are, in alphabetical order: Dennis J. Abbott III, David S. Deifik, David B. Donsker, Carol R. Foss, Pamela D. Hunt, Eric A. Masterson, Stephen R. Mirick, Wayne R. Petersen, Carol R. Foss, who made major improvements to the section on Changes in Selected Bird Species Status and Distribution since 1986, Robert A. Quinn, Robert S. Ridgely, Rebecca W. Suomala, and Anthony J. Vazzano. In addition, we want to acknowledge the lengthy and detailed comments on the species accounts written by Pamela D. Hunt, Rebecca W. Suomala, and Stephen R. Mirick, which were particularly helpful. Collectively all these persons must have spent hundreds of hours which has resulted in a much improved text.

The authors also greatly appreciate the efforts of several people who have contributed major parts of the text on particular subjects. In order of their appearance in the text these are David B. Donsker and Stephen R. Mirick for literature research on the bird names used by Jeremy Belknap in the History of the Ornithological Literature; Pamela D. Hunt who created the snapshot outline of conservation and cultural events, landscape conditions and changes, and major changes in bird populations included in the habitat change chapter; Robert A. Quinn who provided ideas also included in that habitat change chapter; David S. Deifik for the essay on the history of Christmas Bird Counts in New Hampshire; Ernesto Ruelas Inzunza for the essay on hawk watching in New Hampshire; Dana R. Duxbury-Fox for preparing the summary of museum specimens of birds collected in New Hampshire in Appendix II; Danny Bystrak of the US Geological Survey, Bird Banding Laboratory, Laurel, MD, for information that appears in Appendix III; and Pamela D. Hunt and Rebecca W. Suomala for major improvements to the discussion of Breeding Bird Survey results in Appendix IV.

We want to thank several people who provided us with very important data on New Hampshire bird specimens. In alphabetical order they are: Richard T. Holmes, formerly of Dartmouth College, Hanover, NH; Craig Ludwig, US National Museum (Smithsonian Institution), Washington, DC; Rebecca Melius, Boston Museum of Science, Boston, MA; Alison Pirie, Museum of Comparative Zoology Bird Department, Harvard University, Cambridge, MA; Jay Pitocelli, St. Anselm's College, Manchester, NH; Thomas J. Trombone and Paul Sweet, Information Technology Department and Collections Manager respectively, American Museum of Natural History, New York, NY; and Jane Winchell, Peabody Essex Museum, Salem, MA. Access to specimen data was facilitated by the ORNIS network.

New Hampshire Audubon provided bird sighting data from *New Hampshire Bird Records* and previous publications. These data were submitted by volunteer observers and compiled by New Hampshire Audubon. Data prior to 1986 was digitized with the assistance of funding from the Charles Blake Fund of the Nuttall Ornithological Club. New Hampshire Audubon also provided data from *Records of New England Birds* that was digitized by volunteers.

The map of New Hampshire counties and towns appearing in the very front of the book was created by Vanessa Jones of the Audubon Society of New Hampshire (ASNH).

The New Hampshire Christmas Bird Count map was provided courtesy of *New Hampshire Bird Records*, a publication of New Hampshire Audubon.

We are especially grateful for the use of the images drawn by Andrea E. Robbins, including those previously published in Foss (1994), the *Atlas of Breeding Birds of New Hampshire*, copyright 1994 and reprinted with permission. Several images not previously published in the *Atlas* or elsewhere appear here for the first time for which we are deeply indebted to the artist.

We are indebted to the following persons at the New Hampshire Fish and Game Department (NHFG) in

Concord, NH, for their courtesy and copies of department publications: Steven J. Weber, Chief of Wildlife; Judy Stokes, Chief of the Public Affairs Division; Edwin G. Robinson, Certified Wildlife Biologist; Mark R. Ellingwood, Wildlife Programs Administrator; and John J. Kanter, Nongame & Endangered Wildlife Coordinator. The table of the population and breeding history of the Piping Plover was taken from the NHFG website.

Information about the status of vagrants and other very rare birds which have occurred in the three states which abut New Hampshire was provided by Peter D. Vickery and William J. Sheehan for Maine, Christopher C. Rimmer for Vermont, and Marjory W. Rines via the *Bird Observer* database for Massachusetts.

Christian J. Martin, Senior Biologist at ASNH, coordinated monitoring and management efforts which assembled data on Osprey, Bald Eagle, and Peregrine Falcon breeding and population growth which were prepared under contract with the NHFG and which appear in tables included in the accounts for those species. Rebecca W. Suomala provided critically important help in researching older sight records in the files maintained at the New Hampshire Audubon main office in Concord, NH.

The data listed in the table in the Upland Sandpiper species account from Pease Airfield, 1990–2009, was provided by Audubon Society of New Hampshire based on research conducted in partnership with a variety of partners and funding sources during that time period: the NH Coastal Program, US Department of Defense, New Hampshire Department of Transportation—Aeronautics Division, New Hampshire Fish and Game Department, US Department of Agriculture Wildlife Services, and Pease Airfield Management.

Harry Vogel of the Loon Preservation Committee provided the table of data about the growth of the Common Loon population in the state which appears in the account for that species.

Jane Lyman, Reference Librarian at the New Hampshire State Library in Concord, located several out-of-print publications and located information about the 1984 fire at the New Hampshire Fish and Game Department for us. Also extremely helpful in providing information on references for the Bibliography were Sarah Hartwell, Supervisor, Rauner Special Collections Reference Library, Dartmouth College, Hanover, New Hampshire; Donna Gilbreth, Supervisor, Reference and Information Services, New Hampshire State Library, Concord, New Hampshire; Lynda Garrett, Librarian, USGS Patuxent Wildlife Research Center, Laurel, Maryland; and Mary A. B. Sears, Senior Librarian, Ernst Mayr Library, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

The following persons provided unpublished records which have been most helpful: John Ginaven, Eric A. Masterson, Stephen R. Mirick, and Robert A. Quinn.

We also want to especially thank Carol R. Foss, Pamela Hunt and Rebecca Swomala for suggesting several changes that greatly improved the front matter, particularly the section on Changes in Selected Bird Species' Status and Distribution in New Hampshire since 1986.

We are indebted to Mark Wilson for use of his photograph of the Common Loon which graces the dust jacket.

We want to recognize the excellent work done by the copy-editor for this volume, Jennifer W. Hanson. Also, Scott Vile of Ascensius Press did a superlative job of formatting the text, solving any number of logistical problems and seeing the book through the printing process.

Lastly, we wish to recognize the important roles played by our wives. Dana Duxbury-Fox was an important facilitator of many aspects of the text, made several valuable suggestions about content, and helped us find important information that has been included. Without her energy and determination, several things were accomplished which otherwise would not have been. Winkie Keith never failed to be supportive, encouraging and patient as the project took many years longer than expected to reach completion.

Introduction

THE purpose of this book is to describe the status and distribution of the species of birds known from New Hampshire. It is strictly intended to be an annotated checklist, so such matters as the ecology and life history of the species, while otherwise of great interest and importance, have no place here. Where there is sufficient data available for a species over a period of time, an attempt is made to trace population changes, but this is possible for fewer than half of the species included. The species accounts rely primarily on published data, especially in the period from 1950 to the present, as more fully described below. The cutoff date for records is generally the end of 2009, but we have unashamedly included records of rarities, new species, and other exceptional records through 2010 and even into 2011 that came to our attention while the text was being reviewed and finalized. In general, the reader can assume that the data for each species ends at the end of 2009 with the exception of any subsequent records that may be included.

Boundaries

The geographical area covered is that within the present political boundary of New Hampshire. This means that the entire width of the Connecticut River from Stewartstown southward is included, since the legal New Hampshire state boundary extends all the way to the Vermont shoreline. No detailed map or gazetteer is included in this work other than the one appearing at the front of the book. All town and county names used can be found in nearly any standard highway road atlas. Several islands in the Isles of Shoals are also included: Star, White, Square Rock, Seavey, and Lunging Islands, plus several small rocks, these being considered parts of the town of Rye. All the islands north of Star, including Cedar which is connected to it by a breakwater, have been considered since colonial times to be parts of the town of Kittery, York County, ME. In instances below when the exact island in the Isles of Shoals is not stated it is to be understood that the record is from one of the New Hampshire islands.

The eastern boundary passes through Lake Umbagog in the northeast corner of the state. The classic work on this region was written by William Brewster (1924, 1925, 1927) and by L. Griscom (1938) based on Brewster's notes. These notes often do not distinguish in which state records were made. Brewster usually stayed at camps located in ME, and the specimen tags he used were pre-printed as "Oxford County, Maine," even though it is often possible to tell from his writing that specific specimens were taken in New Hampshire. We have tried, insofar as it has been possible, to only include records known to have been made in New Hampshire unless stated otherwise.

Since 1965 there have been several visits by observers to part of Jeffreys Ledge about 17 nautical miles southeast of the Isles of Shoals, and a number of important records have been made there. Jeffreys Ledge begins about 5 nautical miles east of Rockport, MA, and runs northeastward about 26 nautical miles to a point about 30 nautical miles due east of Rye Harbor and thence further northward. It averages about 3 nautical miles in width and lies about 200 feet below the ocean's surface. Only part of the ledge can be considered to be in New Hampshire waters. More problematical is the matter of Cashes Ledge, even further out in the open ocean and well into what is usually considered federal waters.

As in the case of Jeffreys Ledge, Cashes Ledge stretches north and south for over 15 nautical miles and only part of it falls between parallel lines drawn due east from a point on the coast at the MA/New Hampshire boundary and another drawn due east from the midpoint of the breakwater between Star and Cedar Islands in the Isles of Shoals (see below). The area of Cashes Ledge between these 2 lines is approximately 82 miles from the nearest point on Cape Cod, 85 miles from Cape Ann, MA, 85 miles from the Isles of Shoals, and only 63 miles from the nearest point on the coast of ME. Many objective observers would say that records from this area more properly belong to ME rather than either New Hampshire or MA. But we have included some records from both ledges below anyway since all species recorded there also are known to have occurred in areas more defensible as New Hampshire waters.

With these two exceptions, no reports from the open ocean are knowingly included below which are from

locations outside the area circumscribed as follows: from the New Hampshire–MA state line on the beach at Seabrook at latitude 42 degrees, 52 minutes, 3 seconds about 28 nautical miles due east to a point on the 70° 10' west longitude line, thence due north about 6.5 nautical miles to a point, thence due west at latitude 42 degrees, 59 minutes to the established boundary point between ME and New Hampshire on the breakwater between Star and Cedar Islands in the Isles of Shoals, and thence northwestward to Portsmouth Harbor at the middle of the mouth of the Piscataqua River. This area of ocean here deemed to be New Hampshire waters has been adopted by the New Hampshire Rare Bird Committee (NHRBC) in 1996 and has been chosen by the authors partly because it can be simply defined and partly because it is conveniently shown on Coast and Geodetic Survey map #1206 published by the National Oceanic and Atmospheric Administration, Washington, DC.

Data Sources

We gathered bird sighting data from the following sources as outlined in the three parts below.

I. New Hampshire Bird Sighting Publications

The vast majority of records included below have been taken from the various publications of ASNH, and are hereby acknowledged as being from that source, especially from 1950 to date. The ASNH publications referred to are as follows: *ASNH Bulletin*, *New Hampshire Audubon Annual*, *New Hampshire Audubon Quarterly*, *New Hampshire Bird News*, and *New Hampshire Bird Records*.

Those records taken from other, especially older pre-1950, parts of the literature are referenced by the inclusion of the author and year of publication. We recognize that for many species accounts this means many names and dates in parentheses get included and that the text does not read as smoothly as one might wish. But we have not been able to think of a remedy for this situation that provides the same degree of specificity, so we ask that the reader bear with us.

II. Ornithological Literature

At the beginning of the Bibliography appears a list of 52 periodical publications which were searched for reports of New Hampshire birds. The list is broken into two parts. The first portion includes periodicals searched in their entirety, that is, all that was ever published or all that has been published to date. Of these 25, 12 ceased publication by 1930. The second portion includes periodicals searched only in part, in which we found one or more records or others told us about them, or because they were referenced in other publications. Examples of the latter are pre-1900 records that appeared in *American Naturalist*, *Atlantic Monthly*, *Forest and Stream*, and *Shooting and Fishing*, all 4 of which ceased publication by 1930.

Please see page 28 for a more detailed description of the history and contents of the ornithological literature of New Hampshire. Though there are a few earlier publications that can possibly be said to relate to what is now New Hampshire, the first specific publication dates from 1792. In the last 30 years or so of the 1800s, much more was published, and beginning in the early 1900s an even greater increase occurred, followed by yet greater activity from 1950 to date. The authors believe that the bibliography here is the most extensive for any New England state assembled in one place. An effort has been made to provide a review of the major sources in the pre-1950 literature in detail in each species account regardless of how modest the reference might be so the reader can be assured that we have considered every significant early reference we have been able to find.

III. Other Data Sources

In addition to the survey of the literature, 4 other important methods of collecting information about the status and distribution of New Hampshire birds have been used in the state. The first Christmas Bird Count (CBC) in the country took place in 1900 and the first one in New Hampshire was held at Keene the same year. Please consult the history of Christmas Bird Counts in the state by David S. Deifik for further details. Over time, comparative data from CBCs has greatly enlarged our understanding of the winter distribution of many species and how their numbers have changed. Incursions of species from the north are better documented than before, and the increased participation by more people has certainly had a positive effect on the public's appreciation for conservation issues related to birds.

A second important source of data has been the growth of hawkwatching. The information available has not been as consistently gathered in New Hampshire as in some other places, but still a lot has been learned. Please see Ernesto Ruelas Inzunza's survey of the available data in which he also provides a wider geographical context and delineates the timing for many species on their fall passage through New Hampshire.

The third method of data collection which has been important for understanding the movements of birds to and from New Hampshire has been information from banded birds. Please see Appendix III for a summary of the over 17,500 recoveries of birds either banded or recovered in New Hampshire and for a brief history of banding in the state.

A fourth method of data collection has been the Breeding Bird Surveys run by volunteers since 1966. Please see the summary in Appendix IV which provides the history of this survey in New Hampshire and a map of the present locations of the survey routes.

Lastly, the authors have made a major effort to locate as many documented specimens of birds taken in New Hampshire as they could. A general survey of 24 collections including 10 private ones was made in the early 1970s and the results were published (Keith 1974, 1975a and b, 1976a and b). Very little collecting has been done in the state since the 1920s, and the bulk of recent important specimens are mostly salvaged birds. By far the most systematic collector in the history of the state was William Brewster. He took a significant number of specimens in the coastal region in the summers of 1868, 1869, 1871, and 1872, and at Lake Umbagog in 1871–1909. A high percentage of his important specimens has survived, and many are cited by specimen number in the text when their location is known. Sadly, this fate has not been shared by many other important collections, including many originally in the Boston Society of Natural History (BSNH) collection, the predecessor of the Boston Museum of Science (MOS). In many cases, we have the specimen number at BSNH which is listed in the individual species accounts but the specimen itself cannot now be found. Up through early 2011, a total of 4843 documented specimens that were taken in New Hampshire have been located. In addition to those included on ORNIS, a website where approximately 5 million specimens housed in 46 collections in North America are listed, we have included specimens from 4 collections not included in ORNIS. By far the most important collection from the state is the 1975 specimens held at the Museum of Comparative Zoology (MCZ) at Harvard University, the next most important being the Peabody Museum at Yale University (YPM), New Haven, Connecticut. Please see Appendix II prepared by Dana Duxbury-Fox which lists the species for which specimens from the state are known and the collections in which they are housed.

Changes in New Hampshire Bird Reporting

Great changes have occurred in the avifauna of New Hampshire since the precolonial period, many of which are described in the individual species accounts below. During the last 250 years, many of these changes have been directly related to such trends as deforestation; the rise and subsequent decline of agriculture; urbanization, especially since 1950; changes in the amount of, attitude toward, and regulations governing public hunting; lumbering practices; the plume-hunting era; reforestation; filling of both fresh and salt water marshes; and gen-

eral occupation and disturbance of a rapidly increasing portion of the state by people. See the essay below on the history of habitat changes and their effect on the state's bird populations.

An additional type of change that requires comment here is the difficult problem of apparent versus real changes. Any writer of a work of this sort must be on guard to avoid concluding that a species has increased just because there are more reports of it. The increase in reports itself may just be due to greater amounts of, or more expert, field work or the taste of an editor selecting records for publication. As mentioned below in the discussion of the available literature, there are gaps in the published record which make this particular problem an especially vexing one for New Hampshire. More specifically, the most important sources for reports in 1920–1950 were *Bulletin of New England Bird Life* and *Records of New England Birds*, the records for which were collated and edited in MA. Not many New Hampshire birders were well known to the editors at that time, so we believe that many New Hampshire reports may not have survived in print or even been reported to the editors. Even in 1950–1975, when *New Hampshire Bird News* and *New Hampshire Audubon Quarterly* began publication, a disproportionate percentage of reports came from Kimball C. Elkins, Tudor Richards, Robert W. Smart, Vera H. Hebert, Inez F. Hunt, Elizabeth E. Pratt, and a few others, probably because not all birders in the state knew of those publications for a while after they got started. One result of this disproportionate publication of reports was that the status and distribution of species in some parts of the state were much better documented in the literature than others.

In addition, for a period during the 1980s, the number of reports submitted to Audubon Society of New Hampshire declined and those that were received were not published regularly. Robert Smart, Vera Hebert, Inez Hunt, and Elizabeth Pratt were either gone or no longer very active and the society had less money for regular publication. Some seasonal summary reports for 1986 and 1987 were not published until 2006. The authors have tried to adjust as best we could for the fact that a lower frequency of reports probably does not imply significant changes in status or distribution.

Criteria for the Acceptance of Bird Records

As has been pointed out by many previous authors, the decline of collecting and the improving expertise of field observers has required a redefinition of what is acceptable evidence for records supported only by sight observations, particularly at unusual dates or places, or of very rare or extralimital species. Because of the importance and desirability of collected specimens in the authors' opinion, even for species of annual occurrence but at unusual localities or dates, emphasis has been placed on specimen records when they are available. However, great improvements in optical equipment, increasing use of portable tape recorders, the excellent quality of field guides illustrating species of rare or extralimital occurrence, and the rapidly-increasing experience and sophistication of many field observers require that sight records be taken much more seriously than could be justified 50 years ago. However, the collections of New Hampshire birds are not broad enough to permit the approach used by Griscom and Snyder (1955) for MA, where a specimen was required for any species to be accepted on the state list. Specimens from New Hampshire of only 268 species (See Appendix II) are currently known to be extant, so a specimen requirement is unrealistic. Therefore, criteria for non-specimen records have to be established and for the purposes of this work, are as follows:

1. *Acceptable*. Records supported by fully documented extant specimens; a specimen no longer extant but previously verified by a competent authority; an identifiable photograph, video, or motion picture documented as to time and place showing at least one critical field mark; a documented tape recording; a captured live bird later released after being examined by a competent authority; or documented related or fragmentary evidence such as an egg or part of a specimen. Also acceptable are sight records by 3 or more observers previously experienced with the species in life and under such conditions that the critical and necessary field marks could be well seen. As for breeding records, only in cases where the nest or eggs have actually been seen or recently-hatched young, preferably not yet able to fly, are observed is it assumed that breeding is proved.

2. *Hypothetical*. This term is applied to records which do not meet the standards to be fully acceptable but

where the authors believe the identification to have been correct. The most usual cases are those of sight observations where fewer than 3 experienced observers are present or where conditions for the observation of critical field marks are less than ideal. Also included here are older records where details of the observation are no longer obtainable or verifiable but where the authors believe the report is correct. In general, this term is intended to indicate that a shade of doubt is attached to the report, though the doubt is slight in most instances. The reason why a record is put in this category will be stated in the species account or is thought to be self-evident.

3. *Unacceptable*. This term is applied to sight records, usually by a single observer, of species difficult to identify, regardless of date, inappropriate as to date or locality, or for which there are no other records. It also relates to records of a species difficult to identify, regardless of date, place, or previous records, by an observer or observers of unknown competence or known incompetence; a record for which there is no documentation or supporting evidence; and a record which is probably an escaped or released cagebird.

It will be noted that the three definitions above track those given in Griscom and Snyder (1955) but that they also differ significantly. It is clear that many correct records, some perhaps of considerable interest, will inevitably be rejected merely because the observer(s) are unknown to the authors or to those authorities with whom the authors have consulted, or because insufficient details have survived. In addition, it may seem a little absurd to consider hypothetical the records of some large, conspicuous, or very distinctive species on the technical grounds that fewer than three experienced observers were present. But a line must be drawn somewhere, so that is where we have drawn it. The authors take full responsibility for the acceptance or rejection of all records, including any inadvertently omitted, and only hope that those correct records which have been rejected or overlooked have not caused an inaccurate picture of the status or distribution of any species to be presented. We are very much aware that there are errors among the records included here; we just do not know where they are despite our best efforts. New Hampshire Audubon has agreed to collect inaccuracies, omissions, and updates and make them available on the web. Please contact New Hampshire Audubon (84 Silk Farm Rd., Concord, NH 03301; 603-224-9909) or check the web site (www.nhaudubon.org) for instructions on submitting any suggested changes.

It is important to describe a major difference between the way the New Hampshire Rare Bird Committee (NHRBC) functions and the review process used for records in this volume. The authors have worked closely with NHRBC, which has provided us with a copy of its bylaws. In addition to other purposes, perhaps the most significant objectives of the NHRBC are to “review reports of unusual occurrences of birds within the state of New Hampshire and adjacent ocean waters,” and to “accept or reject such reports based on the adequacy of documentation” available. In other words, to fall under the NHRBC’s purview, there has to be some type of *documentation* for it to evaluate. The NHRBC began operations in 1994 and has considered reports from 1986 forward. One of the objectives of the current volume, however, is to address all *published* records of New Hampshire birds, regardless of age and in any publication that has come to our attention. Accordingly, we have included species not reviewed by NHRBC and have included species which NHRBC has rejected for lack of what it considers adequate documentation. In the case of introduced game bird species, NHRBC takes the view that such species have not become part of the self-sustaining avian fauna in the state despite documentation of their presence at least for a while, whereas the present authors have included them since there is adequate published information in most cases. There are also a few species where there have been honest differences of opinion between the present authors and NHRBC, which will come as no surprise to people who have been involved in the review of bird records. As implied above, hypothetical records are included in the main body of the text. Reports of exotics, hybrids, or species the authors believe were wrongly reported for New Hampshire are treated in Appendix I.

Outline of the Species Accounts

The English and scientific names and taxonomic sequence used are those of the seventh edition of the American Ornithologists’ Union *Check-list of North American Birds* (1998) and several supplements thereto (AOU 2000 and 2002–2012 inclusive) with 2 exceptions as indicated in the species accounts (Green-winged and Common

Teal, Eastern and Western Willet). Only species for which there are accepted or hypothetical records for New Hampshire are included in the main body of the text. Game birds and other species that have been intentionally introduced and thus have become part of the wild avifauna of the state, though perhaps only for short times, are listed in the main body of the species accounts.

Nearly all species accounts will also have several divisions headed as follows:

Status. Describes the current statewide status of the species, sometimes with a comment about how that status has changed over time from the first available data. In the case of over 60 very rare or vagrant species, the status of those species in the 3 abutting states of ME, VT, and MA may be provided here, up to date as of 2011 when available.

Early reports to 1950. Intended to provide an historical review of the species' status and distribution from the earliest known reference to it in New Hampshire until 1950. Even though it may have little or no significance for many species, the first state record mentioned in the literature is often included. We have also included the status and distribution information provided by many of the earlier writers from the late 1800s to 1950. We understand that sometimes this approach leads to what may seem needless repetition, but we have done so to make clear to the reader that we have looked at each of these sources for each species to the extent possible. The reader will also realize that the words "common," "uncommon," etc., could easily have meant slightly different things to these early writers who were usually operating in restricted geographical areas, used data they sometimes gathered from others, and were probably subject to whatever observational biases that prevailed at the time. The only way for the reader to have a sense of what status and distribution of a species was in the past is to be able to hear what each early writer had to say about it.

1950 to present. Status described in this section is based primarily on data published in ASNH periodicals and elsewhere and refers to status specifically in the period since 1950. The selection of 1950 is arbitrary but largely coincides with the start of detailed reporting of bird records in ASNH publications and much increased activity by field workers over much of the state. The focus in this section is on population and distribution trends since 1950, the period of time during which the most detailed information has typically been available. Having said that, we are aware that for much of the 1980s the number and variety of observer reports declined from the level of previous years and only in the 1990s did the number of reports recover to pre-1980 levels.

Within this section, an attempt has been made to identify extreme early and late migration dates in spring and fall, peak seasonal migration periods, highest recorded counts in spring and fall, and mean spring arrival dates. The latter are only given when a relatively unbroken series of comparable dates is available. Highest known counts do not always fall in the typical peak migration period, but high counts observed over a period of years tend to indicate when peak migration periods are.

We considered including data on banding results for each species in this section but have elected not to do so since those results have accumulated over a longer span of time than just since 1950 in most cases. All such results appear in Appendix III.

This section may be further divided for convenience into **Spring**, **Summer** or **Summer and breeding**, **Fall**, **Winter**, or **Fall and winter**. These periods do not have arbitrary or uniform beginning or ending dates and may cover different time intervals in the discussion of different species. Therefore, the periods may not exactly follow the periods so designated in *New Hampshire Bird Records* (NHBR) or in other publications such as *North American Birds*. Spring migration for some species may occur up to 2 months earlier for some species than for others, and migration in spring and fall for some species occurs over protracted periods while the summer interval between them, to the extent it occurs, may be only 2 or 3 weeks. In some cases, the designations of **Northbound migration** and **Southbound migration** are used, particularly in the case of shorebirds. In New Hampshire northward shorebird migration typically occurs in a much narrower time window than southbound. Unfortunately, there is not sufficient data available to separate out the peaks of southbound movements of juvenile and adult shorebird populations, though they surely occur. In the case of permanent resident species that show little or no migratory behavior, seasonal categories are sometimes not used. We have been flexible in the use of our seasonal categories and ask that the reader be flexible when reading them.

For migratory species, spring status is discussed first except for species that are primarily winter residents or visitors in which case discussion of fall comes first. Comments about breeding are restricted to data about where and when a species breeds or has bred in the state and, except in very few instances, does not extend to

associated life history data such as egg dates, brood size, incubation periods, etc. This type of information is readily available elsewhere, notably in the *Birds of North America* series of species accounts, available in hard copy or online. An additional source for some of this information is the excellent *Atlas of Breeding Birds in New Hampshire* (Foss 1994) which can be considered a companion volume to the present work. Most importantly, this *Atlas* includes distribution maps for all known breeding species as of the completion of field work in 1986 (cited as the publication year of 1994 elsewhere in species accounts), so it has not been felt necessary to reproduce such maps here as is often usual in books on the distribution of the birds of a state. An attempt has been made to distinguish between the status of nonbreeding individuals of a species and those individuals that do breed in New Hampshire when circumstances warrant and the data permit.

In many species accounts, we have treated migration data from the New Hampshire Isles of Shoals separately from the same information at mainland locations. This is in recognition that the islands often serve as vagrant traps and that migratory movements there are often more distinguishable than those on the mainland. We recognize that there has historically been a lack of coverage on the islands in early spring and late fall, especially, but we have included the best data we have.

Inland reports. A section sometimes used for the separate discussion of unusual records of predominantly marine or coastal species. As a general rule, we have treated Great Bay and the wastewater treatment plants in Exeter and Rochester as inland localities despite the fact that the first 2 of these are on tidal water. Occasional exceptions have been made; the Exeter plant is treated as coastal for several shorebird species but inland for phalaropes and Ipswich Savannah Sparrow, for example. The term “coastal” to us means within a very short distance of the ocean beach.

Remarks. A general section used for corrections, mention of interesting data from adjacent areas, or other matters deemed worthy of note.

Taxonomic note. If a species has one or more races that have been identified in New Hampshire, that information is typically included here. This section is also used for referral to Appendix I where hybrids of the species in question are listed.

Terms of Occurrence and of Numbers

The following definitions of terms are similar to those used in several other works of this kind, particularly Palmer (1949).

Regular – occurs in at least 4 years out of 5 or more often.

Irregular – occurs in about 3 out of every 5 years.

Occasional – occurs in the range of 2 to 4 years out of every 10.

Casual – occurs in the range of 1 to 3 years out of every 20.

Vagrant – no more than 5 accepted records.

Transient – a species passing through, typically in spring and fall, but usually neither a summer nor a winter resident.

Visitor – present only for a short time at any season.

Resident – regularly present throughout the year.

Introduced – indicating a non-native species released within the state or one released outside the state that has extended its range into New Hampshire.

Extirpated – no longer living in the state though perhaps extant elsewhere.

Extinct – no longer living anywhere.

The following terms of numbers apply only to species of regular or annual occurrence:

Abundant – present in such numbers that a capable field observer may see or hear many in appropriate habitat in a day.

Common – present in such numbers that a capable field observer may see or hear a moderate number in appropriate habitat in a day.

Uncommon – present in such numbers that a capable field observer may see or hear only a few in appropriate habitat in a day.

Rare – 5 or fewer individuals reported in an average year.

Abbreviations

Below are the common abbreviations used in the text other than for museum collections. Abbreviations for states, when used, are those promulgated by the United States Postal Service.

et al. – and others

et mult. – and many others

v.o. – various observers

AMNH - American Museum of Natural History, New York, NY

AOU – American Ornithologists' Union

ASNH – Audubon Society of New Hampshire, 84 Silk Farm Rd., Concord, NH 03301

BBL – Bird Banding Laboratory, Laurel, MD

BBS – Breeding Bird Survey

BNEBL – *Bulletin of New England Bird Life*

BSNH – Boston Society of Natural History

BO – *Bird Observer*, P. O. Box 236, Arlington, MA 02476-0003

CBC – Christmas Bird Count

MCZ – Museum of Comparative Zoology, Harvard University, Cambridge, MA

ME-BRC – Maine Bird Records Committee

MVZ – Museum of Vertebrate Zoology, University of California, Berkeley

NHAN – *New Hampshire Audubon News*

NHAQ – *New Hampshire Audubon Quarterly*

NHBN – *New Hampshire Bird News*

NHBR – *New Hampshire Bird Records*, c/o ASNH

NHFG – New Hampshire Fish and Game Department, 11 Hazen Drive, Concord, NH 03301

NHRBC – New Hampshire Rare Bird Committee

PEM – Peabody Essex Museum, Salem, MA

RNEB – *Records of New England Birds*

USFWS – US Fish and Wildlife Service

WFVZ – Western Foundation for Vertebrate Zoology

Discussion of Habitat Changes and Related Changes in Bird Status and Distribution Over Time

The following discussion is in 3 pieces. The first is a description of the land, climate, and forest vegetation of what we know today as the state of New Hampshire written by Robert Fox going back to the time of the last glaciation and bringing that history up to the arrival of the first European colonists. The second part is a chart prepared by Dr. Pamela Hunt which provides a snapshot of the state's habitat history from 3 perspectives: conservation and cultural activities, landscape conditions, and major changes in bird populations. We have chosen to use the snapshot approach because much of the discussion encapsulated in the chart has been addressed at much greater length elsewhere. More specifically, 3 articles were written by Tudor Richards and published in *New Hampshire Bird News* (Richards 1954, 1955, 1956) called "Our Changing Bird Life." Taken together, they are the most complete and authoritative explication of the history of the habitat in New Hampshire from 1623 to the mid-1950s and the effect of such changes on the birdlife of the state. A similar essay written by Tudor Richards and Kimball C. Elkins appeared in the *Atlas of Breeding Birds in New Hampshire* (Foss 1994). It reiterated much of the same information in slightly shorter form and brought the discussion of habitat and bird population changes up to approximately 1993. Rather than simply paraphrasing those 4 documents or reprinting any of them verbatim, we have opted to use the snapshot approach of the chart to summarize them with the understanding that the reader can consult those writings if more detail is wanted. But since this volume is in many ways a companion volume to the *Atlas*, full repetition did not seem justified.

The third part discusses changes from 1994 to 2010 and trends in public involvement since 1950. It has now been 18 years since the publication of the *Atlas*, and though there have been a few changes in the state's habitat, those changes have not been dramatic. However there have been a few major changes in bird populations that warrant mention. Therefore, following the chart we have included brief comments on such bird status and distribution changes that either amplify or extend remarks included in the Richards/Elkins piece. Several of these changes represent significant departures from information included in the *Atlas*, as well. In addition there are further comments by Robert Fox about how some species' populations in the state have changed. Comments on how birders and birding have changed since the 1950s, and the impact of recent conservation efforts, were provided in large part by Robert A. Quinn.

Brief History of the Land, Climate, and Vegetation Since the Last Glacier

The last continental glaciation in North America peaked about 18,000–20,000 years ago, and the ice had largely withdrawn from what is now the northeastern United States by 8000–10,000 years ago. At its peak, the ice was a mile thick and covered even the tops of the White Mountains and all smaller mountains. It left the land scoured by grooves with a northwest–southeast orientation, the direction the ice had been moving for at least 30,000 years. Pre-existing river valleys, the Connecticut and Merrimack, carried melt waters south while the ice gouged smaller pathways that trended southeast to become the Androscoggin and Saco River valleys. Boulders and rocks littered the landscape, and quantities of ground-up rock were deposited everywhere. Many piles of glacial sediment were mounded into drumlins with an orientation similar to that of the glacial grooves. Other debris clogged the runoff of glacial water, producing some large lakes which also filled with sand. Over time, some of these lakes drained, leaving behind flat sandy plains (Cronin 1999). The coastal plain extended all the way to the edge of the continental shelf, much further out than today's coastline. At its lowest point, the sea level was about 300+ feet lower than where it is now because so much water was absorbed into continental ice sheets all over the world (Dodge *et al.* 1983).

In New England the ice stretched across the Gulf of Maine to southeast of Cape Cod, reaching what is now Nantucket, Martha's Vineyard, and Block Island. Many gouged depressions filled with water. Since then most have drained; some are now filled with vegetation, and some still remain. Lake Winnepesaukee is an example of a glacially scoured lake with naturally dammed outlets on its southeast side (Cronin 1999).

Slowly, vegetation returned to what is now New Hampshire as the climate warmed. Cold tolerant plants such as sedges gradually grew further and further north. Soil began to form, which supported grasses, shrubs, and small trees such as arctic willows, producing a habitat such as that now found in arctic Canada. The plant succession eventually produced a spruce-fir forest covering what is now the entire state. As soils became richer and deeper and the climate slowly warmed, pine and hemlock followed by deciduous species such as oak, birch, and beech were able to grow first in the southern parts of the state, then farther northward up river valleys as far as soil and climate permitted. Only within the last 1000 years were conditions suitable for species such as maple, hickory, chestnut, and elms to grow naturally in the southern part of the state. A mature forest became established with spruce and fir dominant in the northern part and at higher elevations and a pine and oak forest in some southern sections. This mature forest was largely undisturbed for several centuries and was what greeted the first European settlers in the early 1600s (Foster *et al.* 2004).

Animals and birds adapted quickly as vegetation returned. Wildlife surely included moose, deer, and bears in the forests; waterfowl and beavers in rivers, lakes, and marshes; and bird species including woodpeckers, finches, thrushes, and grouse.

However, climate changed over time during the last 1000 years. The 9th–14th centuries are often called the “Medieval Warm Period” with centigrade temperatures several degrees higher than at present while the 15th–19th centuries were called the “Little Ice Age” with temperatures lower than the present. This must have caused the prevailing ranges of vegetation and wildlife to shift slightly northward in the warmer period and then south again in the colder period.

Native Americans were hunters and gatherers in what is now New Hampshire for several thousand years but established few permanent settlements, those generally along rivers or the seashore. Occasionally they cleared a little land for raising food, sometimes by controlled burning of the forest, but they made little overall change in the environment. The first European hunters and explorers arrived in the 1500s, but they brought diseases that reduced the indigenous population dramatically. The Pennacook tribe of ME and New Hampshire was reduced from about 12,000 persons to just scattered encampments when English and other colonists first arrived in 1623 (Foster *et al.* 2004).

Changes in Selected Bird Species' Status and Distribution since 1986

The Atlas of Breeding Birds in New Hampshire (Foss 1994) reviews the historical status and population trends for species breeding in the State through 1986, the final year of Atlas field work, and includes significant changes (e.g., confirmation of Merlin breeding) between that year and the date of publication. The North American Breeding Bird Survey (BBS) provides trend data for species that are readily detected by roadside counts. This section highlights significant changes and trends since the time of the Atlas or in some cases, since the beginning of the BBS in 1966. Unless otherwise indicated, the observations below are derived from ASNH data, *New Hampshire Bird Records* database and archives, and BBS trend data and graphs available on line (Sauer et al. 2012). Comments are organized primarily by taxonomic group or habitat preference, but no attempt is made to mention all species here.

Waterfowl numbers have been generally stable to slightly higher for most species. Canada Geese have increased dramatically since the early 1990s, to a point bordering on pest status in some areas. Ring-necked Ducks have expanded their breeding range southward throughout much of the state (E. Robinson, NHFG, pers. comm.). Common Eiders have continued to extend their range southward, and have colonized White and Seavey islands in addition to Lunging Island, where they have nested since the 1970s. However, American Black Ducks have continued to decline steadily throughout their range.

Wild Turkeys have become dramatically more numerous and now occur statewide, including a substantial population in Coos County. Mourning Doves increased through 1990 and have since leveled off.

Common Loons have continued to increase gradually in number and have expanded their breeding distribution from strongholds in the North Country and Lakes Region to an increasing percentage of lakes and ponds in the southern counties. Although they have never been very common, there have been no recent confirmed breeding records of Common Moorhen.

Among shorebirds, Piping Plovers returned to nest in 1997 and a handful of pairs have nested annually since then (NHFG data). Upland Sandpipers have disappeared from all previous breeding areas except the Pease International Tradeport. Willets have become more regular breeders and the number of territorial pairs has increased somewhat.

Herring and Great Black-backed gull numbers have declined dramatically as open landfills have been closed and covered, and only one known inland breeding site remains. Tern and puffin restoration projects in the Gulf of Maine have discouraged large gulls from nesting on coastal islands as well. Wastewater treatment plants, especially those in Exeter and Rochester, have become inland concentration points for gulls since the closing of landfills. Efforts by ASNH and NHFG to establish a Common Tern colony at the New Hampshire Isles of Shoals have been spectacularly successful, with breeding pairs increasing to more than 2,000 since recolonization in 1998. Roseate Tern numbers have grown more modestly since a single pair joined the colony in 2001, and small numbers of Arctic Terns have also nested there since 2002.

Breeding populations of Bald Eagles, Peregrine Falcons, Ospreys, and Cooper's Hawks have recovered thoroughly from the ravages of heavy pesticides, with breeding distributions now including much of the state. Breeding Peregrines now occupy bridges and buildings as well as traditional cliff sites. Merlins have increased and expanded their breeding distribution into suburban neighborhoods in southern counties. Mississippi Kites were a recent surprise addition to the state's list of breeding raptors.

Many New Hampshire dairy farms went out of business during the 1980s when a federal program bought out numerous dairy herds throughout the country. Since that time, the Northern Harrier population in Coos County has decreased substantially to a few confirmed breeding records annually and American Kestrels and Brown-headed Cowbirds have decreased throughout the state.

Many aerial insectivores are experiencing declines, including nightjars, Chimney Swifts, Purple Martins, and most of the swallows. Common Nighthawks have disappeared as a nesting species from all but two urban areas, but continue to nest in the Ossipee pine barrens and on summit ledges of a handful of hills and low mountains. Of the swallows, only the Northern Rough-winged, present in low numbers to begin with, shows no evidence of a decline. Cliff Swallows in particular appear to have suffered a major decline, and Purple Martins have nearly disappeared from the state, with only three known nesting sites remaining. Flycatcher trends are mixed, with Olive-sided and Least flycatchers, Eastern Wood-Pewees, and Eastern Kingbirds showing substantial declines, and Alder Flycatchers increasing.

Some relative newcomers to the state have continued to expand, while others have leveled off.

Turkey Vultures, Tufted Titmice, and Northern Cardinals have increased significantly and expanded into northern New Hampshire. Northern Mockingbirds and House Finch numbers appear to have peaked around 1990 and since declined. Carolina Wrens were confirmed as breeders in 1991 and Red-bellied Woodpeckers in 2002 (although breeding was suspected in 1991) and both species are now widely distributed south of the White Mountains.

Northern Flickers, on the other hand, have steadily declined. Fish Crows have expanded their range in southeastern New Hampshire and Common Ravens have increased and expanded their distribution in the southern counties.

Wood Thrush and Veery appear to be in gradual declines, while Swainson's Thrush has increased slightly. The Canada Warbler's steep decline of the 1970s and 1980s began to level off at low numbers around 1990. Golden-winged Warblers no longer breed here and are seldom seen. Cerulean Warblers nesting was confirmed in Pawtuckaway State Park in 1995, and observers continue to report one or two individuals there annually.

A number of grassland and shrubland species have declined substantially as development or forest succession has claimed once-suitable habitat. Eastern Meadowlarks had declined to very low numbers by the mid 1990s; Bobolinks and Savannah Sparrows are still widely distributed but continue to show declining trends. Eastern

Historical Perspective on Bird Habitat and Conservation in NH: 1600-2010

Time Period	Conservation/Cultural Activities	Landscape Condition/Change	Major Changes in Bird Populations
Pre-settlement	N/A	Largely forested with scattered clearings maintained by Native Americans, particularly closer to coast. Beaver relatively abundant, so natural wetlands widespread. Few if any dammed streams.	N/A, unknown
1600s	Limited hunting was probably not a significant factor to bird populations.	First European settlements in 1623. Initial clearing of land for agriculture and communities, primarily near the coast.	Unknown, but likely minor.
1700s	Very first sign of hunting impact on native birds	European population expands west and north, clearing continues.	Unknown, but likely minor.
1800-1865	Railroads facilitate market hunting; start of industrialization (e.g., Manchester) sets the stage for all sorts of environmental issues (urbanization, pollution, damming rivers, etc.). Civil War marks end of period.	Peak of agriculture by ~1850-1865, over 50% of forest cleared by 1865 or so. Growth of urban centers. Beaver almost eliminated by fur trade, resulting in loss of natural wetlands.	Declines in some species (e.g., native wild turkey); beginnings of 19th century extinctions (e.g. Great Auk). Colonization by grassland birds.
1865-1900	Market hunting continues, millinery trade decimates even non-edible birds. Industrial legacy of altered waterways gets a toehold.	Significant farm abandonment following Civil War, and start of reforestation. Especially in north, unregulated logging sets stage for major fires, erosion, etc.	Continued extinction/extirpation of some species (e.g. Greater Prairie Chicken, Labrador Duck, Passenger Pigeons, & native Northern Bobwhite).
1900-1950	Array of environmental problems (esp., pollution) leads to birth of “modern” conservation movement. Some key milestones include: 1900: Lacey Act, 1903: National Wildlife Refuges established, 1911: Weeks Act (eventually leads to formation of White Mountain National Forest, a major conservation milestone, 1918: Migratory Bird Treaty Act.	As forests recover from logging (and earlier agriculture), there is a shift in dominance from conifers to hardwoods in many areas, since the latter were often more likely to regenerate from stump sprouts or disperse into cleared areas, Thus a net loss of conifer forest, especially in the north. Selective harvest of conifers for pulpwood doesn’t help any. Concomitant increase in shrubby habitats as grasslands (agriculture) decline. Return of beaver; wetlands start to recover.	Waterbird populations begin to recover and continue to do so into the next century. Many other species benefit from conservation efforts, larger acreages of refuges.

Time Period	Conservation/Cultural Activities	Landscape Condition/Change	Major Changes in Bird Populations
1950-1970	Kind of a quiet period; publication of <i>Silent Spring</i> gets the stage for the 1970s. ASNH begins a major period of growth. Many of the modern Christmas Bird Counts started.	Post-WWII affluence/ industrialization leads to increased urbanization and growth of suburbs (latter leading to fragmentation that continues today). Shrubland habitats start to decline, although there is a small increase at the beginning of the period, possibly due to home building related to the first point.	Breeding Bird Survey initiated in 1966 (this is important in the context of the BBS being the baseline – for better or worse – on population trends for most species). First inroads of southern species moving north into NH (Northern Cardinal, Tufted Titmouse, Northern Mockingbird)
1970-present	Key conservation laws include Clean Air and Water Acts and Endangered Species Act. DDT banned. State Nongame program initiated, concomitant with federal efforts to restore endangered species (e.g. Bald Eagle, Peregrine Falcon). Tern restoration begins on Isles of Shoals in 1997. Closing of major landfills beginning in late 1980s. More intense control of spruce budworm outbreaks in eastern Canada. Significant land protection efforts in North Country (Umbagog and Pondicherry National Wildlife Refuges; Pittsburg). Conservation easements in North. On a broader scale, intensified research and interest in influence of non-breeding events on avian demographics. <i>Atlas of Breeding Birds</i> published; e-bird record reporting system begun; Hawk-watching grows.	Sometime in the 1980s, forest regeneration loses out to development, and total forest cover in NH starts to decline. Suburbanization sprawl continues. Grasslands and shrublands continue to mature (or get paved).	Overall declines in grassland and shrubland birds, plus several forest species (including budworm specialists Evening Grosbeak, Cape May Warbler, Tennessee Warbler, Bay-breasted Warbler). Reintroduction of Wild Turkey, supplementation of Canada Goose populations. Dramatic recoveries in heavily managed species (Bald Eagle, Peregrine Falcon, Common Tern, etc.). Inland gull populations decline with closing of landfills. Next wave of southern invaders includes Fish Crow, Carolina Wren, Red-bellied Woodpecker). A few northern species begin to be detected farther south (Palm Warbler, Merlin, Common Raven, Ruby-crowned Kinglet). Concern continues over low productivity in Common Loons.
The Future!	It's up to us . . .	Will development get checked? Climate change may finally start having noticeable effects (e.g., sea level rise, altered forest composition).	

Towhees, Brown Thrashers, and Field Sparrows all declined steeply in the 1970s and 1980s, persisting since the 1990s in very low numbers.

Since 1950 other changes in the bird population of New Hampshire have been noted. One example is the changes in first arrival and last departure dates for many migratory species. The first spring arrival dates for some species have tended to be earlier in the last 20 years while for other species this has not been observed. The dates for the last individual seen in fall have tended to be later for some species but not others. It has been suggested that these changes might be the result of cyclical climate change with the result that food plants and insects are available earlier or later and that the birds are reacting to increased available food supply for themselves and their nestlings. It has also been suggested that certain short-distance migrants find changes in their wintering grounds that hasten earlier northbound migration; examples could be Northern Flicker, Eastern Phoebe, and Pine Warbler. By contrast, certain middle and long-distance migrants which winter as far south as the West Indies and Middle and South America may be less impacted by conditions in New Hampshire; examples could be Swainson's Thrush, Tennessee Warbler, and Field Sparrow. Yet another suggestion is that if a species is declining and thus there are fewer individuals, there is less likelihood that they will extend their time in the state either in spring or fall; examples could be Eastern Whip-poor-will, Purple Martin, and Vesper Sparrow. Hunt (2007a) showed that in spring from 1977 to 2007 34 species have arrived at least 2 days earlier while 13 species arrived at least 2 days later, 28 species arrived 5 days earlier, and 10 arrived 5 days later.

In some cases an entire species can change its breeding or wintering range for various reasons including habitat change, food availability, climate factors, and competition with other species. For example, Golden-winged and Blue-winged Warblers' breeding ranges have shifted since the 1880s from the south-central states into New England. The breeding ranges of both species extended northward but the Golden-winged could not compete successfully with its close relative the Blue-winged Warbler and appears to be in the process of being hybridized out of existence. So the Golden-winged has moved close to the northern limits of habitat it prefers and has sharply declined while the Blue-winged has become a more widespread summer resident in southern sections of the state. Another example is the American Redstart which was most common in brushy woods but became less common as this habitat matured into larger forest. Loss of grassland habitat both in New Hampshire and on the wintering grounds of some species has probably impacted such species as Vesper Sparrow and Eastern Meadowlark even since the 1990s. Changing habitat and climate conditions may have had an effect even on wintering species; American Robins and Eastern Bluebirds were rare on Christmas Bird Counts in the 1950s but have become regular in the 21st century during a succession of milder winters and as fruit- and berry-bearing plants have become more widespread.

An interesting trend since the 1980s has been of species apparently re-occupying ranges in the state from which they were extirpated. Examples include Common Eiders, Double-crested Cormorants, gulls, and terns breeding on the Isles of Shoals, and Willets in the mainland coastal marshes. American Oystercatchers have not returned to nest yet though they once did all the way north to Labrador; the number of sight records has grown markedly in recent years. Bald Eagles, Peregrine Falcons, and Ospreys have reappeared in good numbers in most parts of the state. Sandhill Cranes have become annual visitors and may already be breeding at some remote unknown location; they have already been documented nesting in all three states that abut New Hampshire. Common Ravens are now widespread over much of the state after being virtually extirpated by the early colonists. Conversely, the American Kestrel was possibly an uncommon species in the heavily-forested conditions that existed prior to European settlement, and it now appears to be reverting to that status in recent years.

Our understanding of bird distribution patterns in the state has been dramatically affected by changes in birders themselves and the ways in which bird study has been pursued. First, there has been a huge increase in the number of birders, both nationally and in New Hampshire. Additionally, the birding information world has exploded along with the quality of optics. When Tudor Richards started birding in the 1930s, his memory of shotgun birding was just as vivid as current birders' memories of birding before roof prism binoculars, the internet, and digital photography. In the 1950s, there were really only two widely-available field guides, those of Roger Peterson and Richard Pough. Now there is so much information available in so many media that at times it can distract from focusing on the birds themselves and learning them the old-fashioned way, by studying them at length in the field.

Consider a short list of items that did not exist until relatively recently: electronic e-mail lists and forums;

digital photography which can provide unparalleled photographs; the New Hampshire Rare Bird Committee with its research and reports; cell phones (with cameras); extremely high-quality optics that allow feather-by-feather studies; eBird data entry and its vast readily-accessible database; real-time information from radar images to video cams to satellite tracking; the impact of DNA studies on taxonomy; ease of video and audio recordings and sharing; the huge compendium known as the *Birds of North America* that is available online (with regular updates); rare bird alerts; etc. Taken together, all these developments have made today's birders better informed about the status and distribution of New Hampshire birds than ever before. The news of unusual birds travels faster and the means of both identification and documentation of rarities have improved dramatically. To all this can be added the effect of increases in activities by larger numbers of people which also result in data collection on bird numbers and distribution. In many ways this can be considered birding with a purpose. Examples are 4 activities discussed in the following section: Christmas Bird Counts, hawkwatching, Breeding Bird Surveys, and banding. In addition, there are other surveys in which birders can participate that are focused on individual species or groups such as goatsuckers, Rusty Blackbirds, Purple Martins, Cliff Swallows, and others sure to come, especially if an updated breeding bird atlas gets under way in the future.

Another change is the growth of conservation and an awareness of its importance. Habitat and land protection as we know it has made a quantum leap since the 1950s when there were no National Wildlife Refuges in New Hampshire, and no one had heard of a land trust. Large acreages of quality habitat that are open to birding have been protected since 1950. In the 1950s and 1960s, we were just starting to think about legislation to protect our water and air and great strides have been made since. As noted above, it was then still legal to shoot most hawks and owls! DDT was sprayed almost indiscriminately causing havoc with many species. The Endangered Species Program and list did not exist in New Hampshire. We have come a long way but still need to work hard and be vigilant for threats to our birds. Private conservation efforts, land trusts, and municipal conservation commissions have become important tools in conservation efforts, most of which did not exist in the 1950s. We have also learned that it is important to focus on quality as well as quantity when considering land conservation opportunities. But challenges still exist. The acreage of freshwater wetlands in the state's interior continues to decline and even the area of saltmarsh habitat in healthy condition is smaller than in 1950.

History of the New Hampshire Ornithological Literature

THE BIBLIOGRAPHY for this book includes 1258 titles. The attempt has been made to include all serious published work that discusses birds in New Hampshire. Some titles are tangential to the main purpose of the book, which is the status and distribution of the avian fauna of the state, and some are general works. But if New Hampshire birds are mentioned in a serious bird publication, we have included it here. To some, many of the older titles may appear to be trivial, but at the time they were published they were considered to be advances in the known distribution or ecology of the species discussed. In many cases, the subject names of many of these older titles do not inform the reader what the publication is about, so many titles have been annotated in brackets in the bibliography to make this clearer. We have not cited every title included in the bibliography somewhere in the text, primarily because many titles include information that is now dated or focused on topics (ecology, life history, etc.) that we do not discuss. We also doubt that anyone will undertake to write another book on the birds of New Hampshire that purports to be as exhaustive as this one for many years, so we have elected to err on the side of inclusiveness in order to have as complete a bibliography as possible for the state.

The oldest known writings about birds in New England are those of T. Morton (1632), W. Wood (1634) and J. Josselyn (1672). Morton (1632) cannot be proved to have been writing specifically about New Hampshire, the boundaries of which had not been settled at that time, though he does mention swans in the Merrimack River and at least 23 other bird species, some of which (such as Passenger Pigeons, Snow and Canada Geese and various ducks) certainly were present in what is now the state. He also describes what could only be Heath Hens as well as Wild Turkeys, Ruffed Grouse, and Northern Bobwhites. Wood (1634) wrote about an area that stretched from Narragansett Bay north to what is now the southern tip of ME, and his map includes the Isles of Shoals. His Chapter VIII lists at least 26 bird species, particularly the Passenger Pigeon which “comes from the north.”

The first specific printed reference to any bird in New Hampshire is that of John Josselyn (1672). He describes “the pilhannaw, or mechquan, much like the description of the Indian ruck; a monstrous great bird; a kind of hawk, – some say an eagle; four times as big as a goshawk; white-mailed, having two or three purple feathers in her head, as long as geese’s feathers they make pens of. The quills of these feathers are purple, as big as swan’s quills, and transparent. Her head is as big as a child’s of a year old; a very princely bird. When she soars abroad, all sort of feathered creatures hide themselves; yet she never preys on any of them, but upon fawns and jaccals. She ayries in the woods upon the high hills of Ossapy, and is very rarely or seldom seen.” As Allen (1903) states: “Doubtless, as suggested by Dr. Tuckerman, Josselyn’s bird was but a confused conception of the golden eagle, the bald eagle, and the great blue heron. The purple feathers are supposed to indicate the heron, and the white head and tail of the bald eagle may meet the conception of a ‘white-mailed’ bird; the habit of preying on fawns perhaps indicates the golden eagle.” Josselyn (*op. cit.*) only describes 12 species and provides fanciful medicinal values to some of them. One species he mentions was the “Wobble”, a large flightless seabird which could hardly have been anything but the Great Auk.

The next specific references to birds in New Hampshire are those of Jeremy Belknap (1792, 1812), who included a list of birds in his history of the state. He mentioned 140 forms, 8 of which were on the authority of a Mr. Peck, and gave both English and scientific names for most of them. Unfortunately, there are inconsistencies between the two published lists, the later one containing more species than the first and some of the scientific names being given differently in the two versions. Some species listed are very puzzling to identify, and 2 species are included for which there are good reasons to suspect that Belknap may have had inaccurate information, since it seems highly unlikely that these two species were present at the time (Red-bellied Woodpecker, Tufted Titmouse). The authors are deeply indebted to David B. Donsker, especially, and to Steven R. Mirick for the time and effort they invested in researching obsolete scientific names, looking up other early references, and figuring out in many cases what species Belknap probably meant when it was not at all clear at first. The result is that a consensus has now been reached on the identity of nearly all the birds listed, and that consensus is included in the individual species accounts. There were 5 forms listed for which the identity appears unknowable.

As indicated in the individual species accounts, 133 forms Belknap listed can now be identified to species with reasonable or complete certainty, there being 2 apparent duplications.

Major works discussing New Hampshire birds specifically from the late 1800s and early 1900s were the first systematic efforts to describe the distribution and status of the state's birds. Interestingly, several of them focused on the northern part of the state. E. A. Samuels (1865, 1867, 1872) and W. A. Stearns (1887) wrote general works covering New Hampshire as well as other parts of New England. Charles J. Maynard (1872) wrote only about Coos County.

The next major contributions to the literature for the state came from Ned Dearborn, who wrote his Master of Science thesis on the *Birds of Belknap and Merrimack Counties* (1898) and his doctoral dissertation on *The Birds of Durham and Vicinity* (1903) at what is now the University of New Hampshire. These publications inaugurated the modern era of ornithology in the state. Also in 1903, a young Glover M. Allen published his *List of the Birds of New Hampshire*, a work slightly more significant than Dearborn's papers because it covered the entire state and was the result of more exhaustive bibliographical research. However, Dearborn's doctoral thesis appeared while Allen's book was in press and included 29 species for which Allen had no records, so Allen added these and other notes in a postscript. Six years later, Allen (1909) mentions New Hampshire records specifically and extensively in his general list of the species known in New England.

William Brewster published 24 short papers that made some mention of New Hampshire birds from 1872 until 1902, but his most important contribution to bird study in the state was not published until after he died in 1919. This was his *Birds of the Lake Umbagog Region of Maine* which was prepared from his notes of visits to the lake almost annually from 1871 until 1909 and which included a wealth of natural history and distributional information on the species of this area. Despite the title of the paper, over half of the Lake is in New Hampshire, and a few notes were included for localities as far west as Dixville Notch. Mr. Brewster worried little about the state boundary, however, and in many cases his notes provide no clue about the state in which he saw or collected many species, particularly water birds. His paper was published in parts in 1924, 1925, 1937; the last part compiled from his notes by Ludlow Griscom was published in 1938. The present authors have made an effort to include in the systematic list only Brewster's records provably in New Hampshire though occasional records clearly in ME have been mentioned for perspective.

Charles F. Goodhue is only known to have published 3 short papers on New Hampshire birds, the first of which, *The Birds of Webster and Adjoining Towns* (1877), established him as an authority on the birds of the central part of the state. His major but virtually unknown work was *Fifty Years Among the Birds of New Hampshire*, a survey of all species which he knew had occurred in the state. It was never published but the original was bequeathed to the City of Concord and was later transferred to the Squam Lakes Science Center. Two copies were made, one of which is at ASNH headquarters in Concord. The manuscript was essentially finished in 1922, but marginal notes and an appendix were added until at least 1930, and it stood as the most thorough statewide survey of the avifauna for nearly 50 years.

Another 24 writers wrote short pieces about single observations or smaller geographical areas before or just after 1900. Some of the more important ones were J. A. Allen (1869–1876), F. Bolles (1890–1893), T. M. Brewer (1877–1879), C. B. Cory (1882), W. H. Fox (1876–1884), J. P. Melzer (1890–1935), H. D. Minot (1876–1903), and the noted taxidermist S. A. Shaw (1885–1889). As this indicates, quite a lot of work about New Hampshire birds was being published before the start of the last century.

Another source of early bird distribution information was town histories. It was popular, especially between 1850 and 1900, for towns celebrating their 50th, 75th, or 100th anniversaries of founding to hire historians to write about the early times right after the town was established as well as subsequent development. These histories usually included a chapter on the wildlife the first settlers found, and the usual species mentioned were Wild Turkeys, Passenger Pigeons, Ruffed Grouse, rarely a few smaller birds, and other animals such as bears, deer, moose, beavers, etc. From these histories it has been possible to plot the precolonial distribution of Wild Turkeys, in particular. There are 17 histories in the bibliography spanning the time from 1845 to 1925, but most were written in the last 50 years of the 1800s and primarily covered the southern part of the state where the first towns were settled. Exceptions are Crawford (1845) about the White Mountains and Weeks (1888) about Coos County.

In 1900–1950, there were several authors who wrote important distributional works about New Hampshire birds. G. H. Thayer wrote five titles in 1902–1909 which primarily focused on the Dublin area. The young Charles H. Rogers, a participant in the very first Christmas Bird Count in 1900, was afflicted with asthma as a youth and spent parts of summers in northern New Hampshire at Franconia Notch and the Connecticut Lakes; he kept notebooks of the birds he saw 1902–1919 and again in 1938 and 1949. His detailed notes provide a window into the birds of that region when little else was being published. Rogers eventually became professor of ornithology at Princeton University. Horace W. Wright's most important paper on New Hampshire birds was *Birds of the Jefferson Region in the White Mountains* (1911). Based on his summer and early fall visits to southwestern Coos County in 1899–1911, he described the status of 185 species in an area about which nothing had been written since the work by Charles J. Maynard in 1872. Edward H. Forbush published a major work on the *Birds of Massachusetts and Other New England States* in three volumes 1925–1929 which covered New Hampshire. F. B. White wrote detailed studies of the birds of the Concord region that appeared in 1924 and 1937; together with Goodhue's 1877 report and 1922 manuscript, they provide a 60-year perspective of changes in the birds of that area. White also published 19 other papers on birds of the state. Bagg and Eliot's classic study, *Birds of the Connecticut Valley in Massachusetts* (1937), also includes much data on birds in the same valley north into New Hampshire. Lastly, Ludlow Griscom published 10 pieces related to New Hampshire birds other than Brewster's notes from Lake Umbagog (1938).

Also from 1900 to 1950, another 18 authors published mostly short notes on New Hampshire birds. From today's viewpoint, many of these notes seem like trivial comments on behavior, breeding biology, ecology, etc., though they were considered important at the time. Some of the more notable writers were Thomas Barbour (1927), Arthur Cleveland Bent (1938–1958), Stuart T. Danforth (1916–1924), and Alfred O. Gross (1927–1956), all of whom had distinguished ornithological careers later. Reginald Heber Howe, Jr., kept a list of birds at Camp Pasquaney in Bridgewater 1901–1903, which was published in the camp newsletter. F. P. Lord (1918), a professor at Dartmouth College, compiled a list of spring arrival dates at Hanover which offers a window into migration at the time. J. C. Phillips, a specialist on game birds, published notes on duck and woodcock fall migrations, and Ruffed Grouse abundance 1922–1926. The energetic Eugene J. Goellner, professor at St. Anselm's College in Manchester, was an active field observer there and in coastal areas and wrote several notes 1928–1936.

Beginning in 1936 the New England Museum of Natural History, forerunner of the Boston Museum of Science, began publishing the monthly *Bulletin of New England Bird Life* which included reports from all New England states, though primarily from Massachusetts. This series continued until 1944 when it was taken over by Massachusetts Audubon Society and renamed *Records of New England Birds* (RNEB). As pointed out by Berry and Suomala (2007), this series continued until 1968, but by the early 1950s, various publications of the Audubon Society of New Hampshire began to have more complete and detailed reports and the number of New Hampshire records published in RNEB rapidly tapered off.

Then there were the banders who were in the forefront of what was then a new method of learning bird distribution. Several of them published frequent notes on plumages, seasonal records, even parasites: K. C. Harding (10 titles in 1925–1943), J. P. Melzer (1928–1935), M. J. Magee (1930–1934), R. L. Weaver in Hanover (6 titles in 1939–1942), F. B. White in Concord (1920s–1930s), Dr. J. H. Kennard in the Connecticut River valley (7 titles 1959–1976), and the husband and wife teams of H. G. and C. L. Whittle in Peterborough (38 titles 1920–1937) and B. M. and M. S. Shaub who focused on Evening Grosbeaks (1954–1963). But the all-time champion is the redoubtable L. O. Shelley at East Westmoreland who put 64 titles in print 1926–1938; these included a variety of observations in addition to banding records and made a major contribution to the knowledge of birds in Cheshire County.

There were also writers with a special interest in the Isles of Shoals. Since colonial times, the islands have been divided between New Hampshire and ME with the largest (Appledore, Cedar, Duck, and Smuttynose) belonging to ME, and Star, White, Seavey, and Lunging Islands and Square Rock belonging to New Hampshire. Unfortunately, most of the bird survey work done in the Shoals has been done at Appledore, and this was the home for many years of Celia Thaxter (1870, 1894) who wrote charmingly about the seasons and birds there. Professor C. F. Jackson of the University of New Hampshire published notes on the islands 1931–1947 and 2 of his students wrote their Master's theses about the birds there: P. F. Allan (1931) and P. L. Wright (1937a, 1937b). Others who have contributed information about birds there are Mark Libby (1955), Wendell Taber (1955, 1960),

W. P. Fowler's comments on C. Thaxter (1960), L. V. Rutledge (1972), W. H. Drury and J. A. Kladec (1974) on Herring Gulls, and A. C. Borrer and D. W. Holmes' survey of Appledore's breeding species (1990). The Masters Thesis by Rebecca Suomala (2005) detailed migrant songbird stopover at the Isles of Shoals (including Star Island) and four studies by Sara R. Morris (2001–2003) of warbler migration stopover patterns on Appledore doubtless are reflected on the New Hampshire islands.

The New Hampshire Fish and Game Department (NHFG) has been publishing information on the state's wildlife since at least 1940. The bibliography includes important works by J. F. Mueller (1940), N. W. Hosley (1940), M. W. Provost (1942) on waterfowl abundance, H. R. Siegler (1949), S. A. Dole (1951, 1952), S. A. Dole *et al.* 1953), J. A. Lee (4 titles 1953–1954), and J. Petersen and R. Vail (1954). Major publications since include H. Silver's (1957) broad survey of the state's birds and mammals, H. C. Lacaillade's (1975) waterfowl status review, the department's *Wildlife Action Plan* (WAP 2005), and P. D. Hunt's *The State of New Hampshire's Birds* (2009b) and her *Update of The State of New Hampshire's Birds* (2012).

Some of the most important publications on New Hampshire birds have appeared since 1951. Regional studies include E. Allison and K. Allison's (1979) work on the Dublin region updating and incorporating the 1912 work of G. H. Thayer, 2 editions of B. S. Ridgely's book on the *Birds of the Squam Lake Region* (1977, 1988), and M. Cohn-Haft's 1995 *Birds of the Second College Grant*. Other notable series of publications around this time were the important series of 25 papers and books on woodpeckers based very largely on observations in New Hampshire by Lawrence Kilham.

By far the most significant single publication since 1951 and possibly in the history of the state literature has been the *Atlas of Breeding Birds in New Hampshire* based on field work done 1981–1986 and edited by Carol R. Foss (1994), a benchmark against which future population and distributional changes can be measured. In addition to species accounts for 204 species, this outstanding volume includes maps of land elevations, the distribution of forest types, and the boundaries of the five watersheds in the state. There are discussions of geological history; soils and forest types; climate factors such as precipitation, mean temperatures, and length of growing season; physiographic regions; political divisions and the distribution of the human population in the state. Though the latter two may be slightly dated by the passage of about 20 years, the rest are essentially as accurate today as they were in 1994. In addition there are 2 important essays, one on the "Major changes in the breeding avifauna of New Hampshire since its first settlements by Europeans, in 1623" by T. Richards and K. C. Elkins, and "A proposed division of New Hampshire into avifaunal regions based largely on the altitudinal distribution of breeding birds" by T. Richards. The breadth and quality of the prefatory material in the *Atlas* volume as well as the species accounts has made it unnecessary to include much of the same information which would ordinarily be required in a volume such as the present one. Thus, the present work is essentially a companion volume to the *Atlas*. Lastly, the *Atlas* bibliography includes 935 references, only a modest proportion of which are also included here.

Also as pointed out by Berry and Suomala (2007), the publication of New Hampshire bird sightings goes back at least to 1921 with *ASNH Bulletin* followed by *New Hampshire Bird News* from 1951 to 1960, then *New Hampshire Audubon Quarterly* from 1961 to 1976, then renamed *New Hampshire Audubon* from 1977 to 1982. The bird sightings portion of the latter was split off in 1982 into *New Hampshire Bird Records* (NHBR) which continues today. These various periodical series provided a vehicle for publishing short notes, serialized articles, individual species profiles, etc., by several authors. W. Taber wrote 4 articles in 1954–1960, and V. H. Hebert published 12 pieces in 1953–1975 as well as serving as a seasonal bird records editor for decades. K. C. Elkins wrote 4 pieces in 1953–1964 and also served as seasonal bird records editor for many years. A. R. Keith published 5 articles on collections of birds known from the state 1974–1976.

In addition to serving as an officer of ASNH from 1948 to 1968, as Executive Director 1968 to 1982, and as an advisor to ASNH after that, Tudor Richards published 30 articles in 1950–2000, all in ASNH publications, including some of the most important ones on inland water birds, shorebirds, the history of New Hampshire forests, changes in bird distribution, Pondicherry Refuge, etc. In addition, his unpublished Master's thesis on New Hampshire waterfowl (1952a) deserves more appreciation than it has received up to now. More recently, P. D. Hunt published 13 works in 1995–2009, primarily in the ASNH periodicals, but also important ones on the status of the state's bird populations in 2009 and 2012 for the New Hampshire Fish and Game Dept. Eric A. Masterson wrote 14 species profiles in *New Hampshire Bird Records* 2001–2010. Stephen R. Mirick published 6

titles 1998–2009 and deserves credit for setting up the e-mail list on which daily field observations are now posted, a significant modernization of the process for sharing current bird sightings in the state.

It should also be noted that from 1986 through 2009, Professor Richard T. Holmes of Dartmouth College and 35 of his students published 55 papers, theses, and dissertations on birds in a wide variety of peer-reviewed journals, based primarily on research done at the Hubbard Brook Experimental Forest (White Mountain National Forest) in West Thornton, New Hampshire. And that does not even count the papers on mammals, insects, etc. As a result of this series of papers, among other things, the Black-throated Blue Warbler has become one of the most intensively-studied bird species in North America.

Lastly, it is highly appropriate that the Nuttall Ornithological Club should be the publisher of this volume. Over time, 64 members of the Club are listed in the bibliography as having contributed to the published literature of New Hampshire birds. The most prominent among them are William Brewster, founder of the Club, Glover M. Allen, Arthur C. Bent, Charles B. Cory, Stuart T. Danforth, Jonathan Dwight, Alfred O. Gross, Ernst Mayr, Francis B. White, Horace W. Wright, Kimball C. Elkins, and Tudor Richards, just to name a few.

Christmas Bird Counts

David S. Deifik

THE CONCEPT OF the Christmas Bird Count was originated by Frank Chapman in 1900. In that year he proposed the Christmas count as an alternative to the traditional Christmas “Side Hunt.” This was a hunting contest between two teams of hunters who would take to the field to kill every bird they encountered. The “side” with the highest count won. As the conservation movement dawned at the beginning of the 20th century, this was seen as a symbol of the wanton destruction of birds that had led to the extinction or near extinction of numerous species.

Frank Chapman was born in 1864 and grew up in New Jersey. He was interested in bird study at an early age. After graduating from high school he briefly worked in a bank, but the lure of bird study led him to volunteer with the American Museum of Natural History to study birds in Florida. One year later he had collected a series of 500 specimens, which he brought with him when he was offered a position with the museum. Thus began a distinguished career as an author, researcher, and advocate for bird conservation.

In the first year of 1900 there were 25 counts involving 27 participants nationwide. The numbers have now grown to over 2000 counts with over 50,000 participants. It is also an international effort with counts in 17 other countries besides the United States.

The history of Christmas counts in New Hampshire dates back to their very first year of 1900. In that year Clarence Brooks took to the field from 10:30 to 13:30 in Keene. With the temperature just at freezing he recorded 1 American Crow, 1 Northern Shrike, and 16 Black-capped Chickadees. Brooks was born in 1881 in Charlestown, New Hampshire, to a family that settled in New England before the American Revolution. He was a graduate of Keene High School and attended West Point for 1 year. He spent his career as a highway engineer in New York, New Hampshire, and Vermont. He was a member of both the American Ornithologists’ Union and the Wilson Ornithological Society which had been founded, respectively, in 1883 and 1888.

From 1900 to 1949 there were usually only 1 to 4 counts run in New Hampshire in any given year, for a total of 99 counts over that 50-year period. These were typically small counts with few participants and none of these counts were run consistently; they were usually run only a few times. Dates and highlights of some early counts, listed alphabetically:

Antrim: run only in 1911 and 1912.

Canterbury: run only in 1906.

Cornish: run only in 1905–1908. Three hundred Snow Buntings found in 1905.

Dover: run only in 1915 and 1916. In 1915 there were 37 Herring Gulls, 2 Eastern Meadowlarks, and 13 American Goldfinches counted. Parts of this count area are now included in the Lee–Durham count which started in 1963.

Dummer Hill (between Berlin and Errol): run only in 1948 and noted 1 Boreal Chickadee, 25 Evening Grosbeaks, and 2 White-winged Crossbills.

East Westmoreland: a longer-term count run from 1928 through 1938 with 1 to 4 observers who averaged 11 species. An Eastern Meadowlark seen in 1931 was the most notable record. Part of count area is now included in the Saxtons River, VT, count area.

Exeter: run in 1902 only. Two observers found a Northern Hawk Owl, a species not recorded again on any New Hampshire CBC until 1961. Most of this count is now included in the Coastal New Hampshire count.

Goffstown: Maurice Blaisdell was the sole observer from 1920–1928 (but it was not run in 1926). He found Pine Grosbeaks in 1921 and 1923 and American Robins, quite scarce at that time, in 1922 and 1927.

Hanover: run from 1927 to 1930 by N. L. Goodrich and F. P. Lord. The first year they found 4 White-winged Crossbills, 21 Common Redpolls, and 4 Pine Grosbeaks. It was again run in 1939 and 16 participants recorded 19 species including a Barred Owl. The count now covering this area is the Hanover–Norwich count, started in 1960.

Jaffrey: run in 1915, 1916, 1919, and 1921–1923. Participants included Lucia Cutler, Nina Spaulding, and Mrs. C. L. Rich. This is one of the earliest mentions of women birders involved on a CBC in New Hampshire. The ladies found a Boreal Chickadee in 1916 and 146 Common Redpolls in 1918.

Jefferson: run in 1939 and 1940 with 11 species the first year and 12 the next. A Red-tailed hawk was considered unusual in 1939. Most of this count's area is now included in the Littleton count.

Meriden: run in 1904 and 1911 by Ernest H. Baynes. He was a well-known conservationist and nature writer in his day. He was a founding member of the North American Bison Society. As the game manager for Austin Corbin, the creator of a 19,000 acre private hunting reserve in that area still known as Corbin Park, Baynes brought Bison to New Hampshire. He also founded the Meriden Bird Club and the Meriden Bird Sanctuary. On the 1904 CBC he recorded 10 species including 100 Common Redpolls. In 1911 he found 11 species including 100 Common Redpolls, 5 Red Crossbills, and 13 White-winged Crossbills. His best find was an Eastern Screech-Owl, which even now is quite unusual for that area. There are no records at all for the nearby Hanover CBC, and the only records even somewhat close to this area come from Keene in 1977 and Peterborough in 2007, both quite a bit south of the area.

Nashua: M. B. Townsend ran this count in 1914, 1917, and 1931. In 1914, 12 species were counted including a Ring-necked Pheasant. In 1917, 1 Snow Bunting and 297 European Starlings (a recent introduction at that time) were seen. In 1931 11 species including 10 House Sparrows were seen. Most of this count's area is now included in the Nashua–Hollis count, started in 1965.

Newington: run only in 1943 with 7 observers who found 16 species including a Rough-legged Hawk and 1 Great Blue Heron.

North Haverhill: run only in 1936.

Pinkham Notch: run in 1942 with 8 observers and in 1944 with 1 observer. In the latter year, the noted ornithologist Chandler Robbins found a Three-toed Woodpecker. There are only 3 other New Hampshire CBC records for that species. It was not seen again until 1963.

Plaistow: run only in 1918.

Randolph: run only in 1908. Six species were recorded including 24 Common Redpolls.

Rochester: run only in 1915. Part of this area is now included in the Lee–Durham count.

Strafford: run only in 1922. The lone observer was George Atwell who was Secretary of the Audubon Society of New Hampshire at the time. He found two European Starlings.

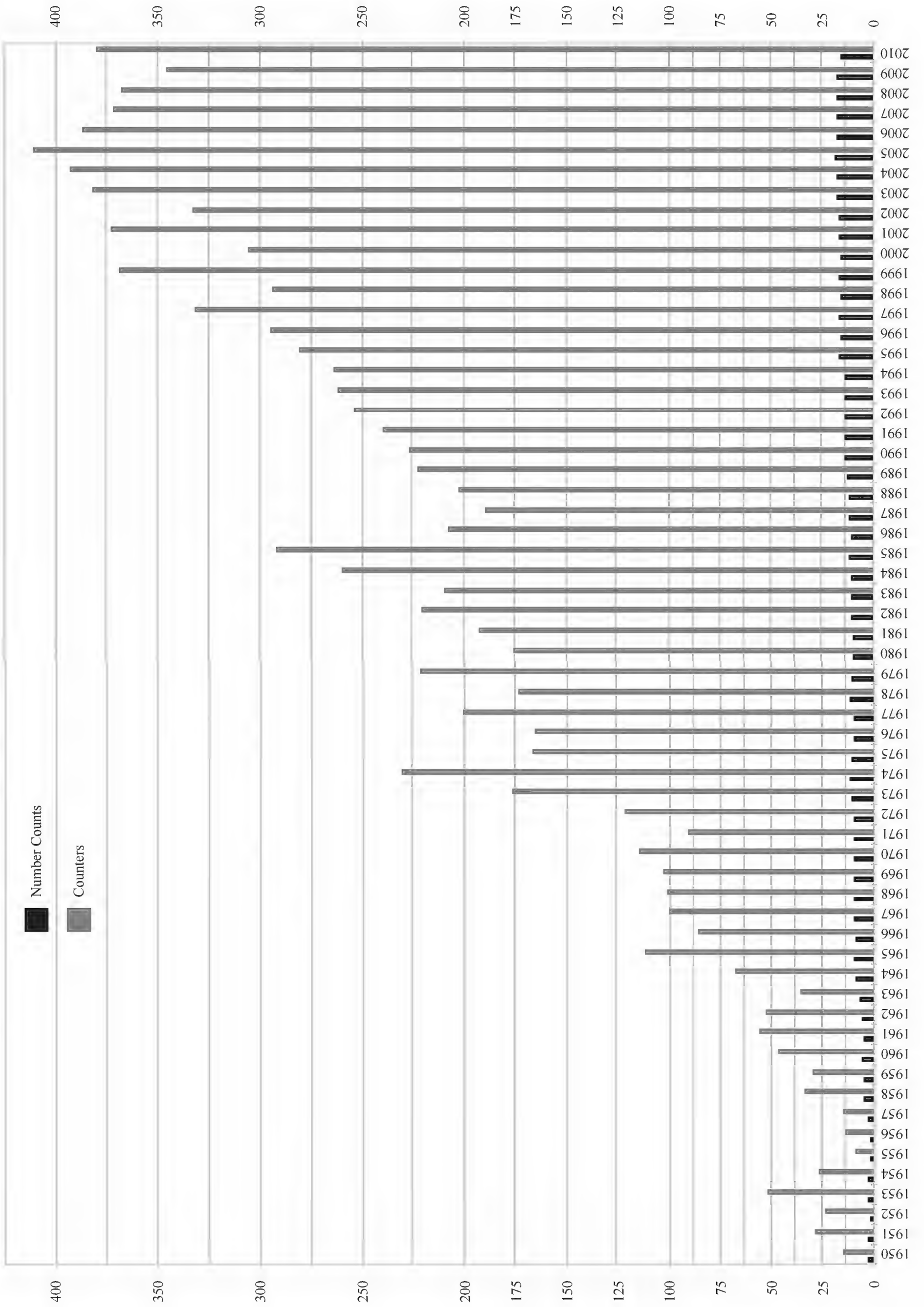
Tilton: run in 1904, 1906, and 1908–1916. The number of participants varied from 1 to 4 in those years, and the collective number of species found over all those counts was 22. White-throated Sparrows found in both 1911 and 1912 were considered unusual at the time. Part of the area of this original count is now included in the Laconia–New Hampton count.

Waterville Valley: run only in 1947 with 1 observer, Tudor Richards. He found a Boreal Chickadee, 10 Purple Finch, 11 Red Crossbills, and 7 White-winged Crossbills.

Wilton: run in 1903–1908 by C. G. Blanchard. In 1903 he found a Gray Catbird and 43 Pine Grosbeaks, in 1905 he found 5 White-winged Crossbills, and in 1906 he found 325 Common Redpolls.

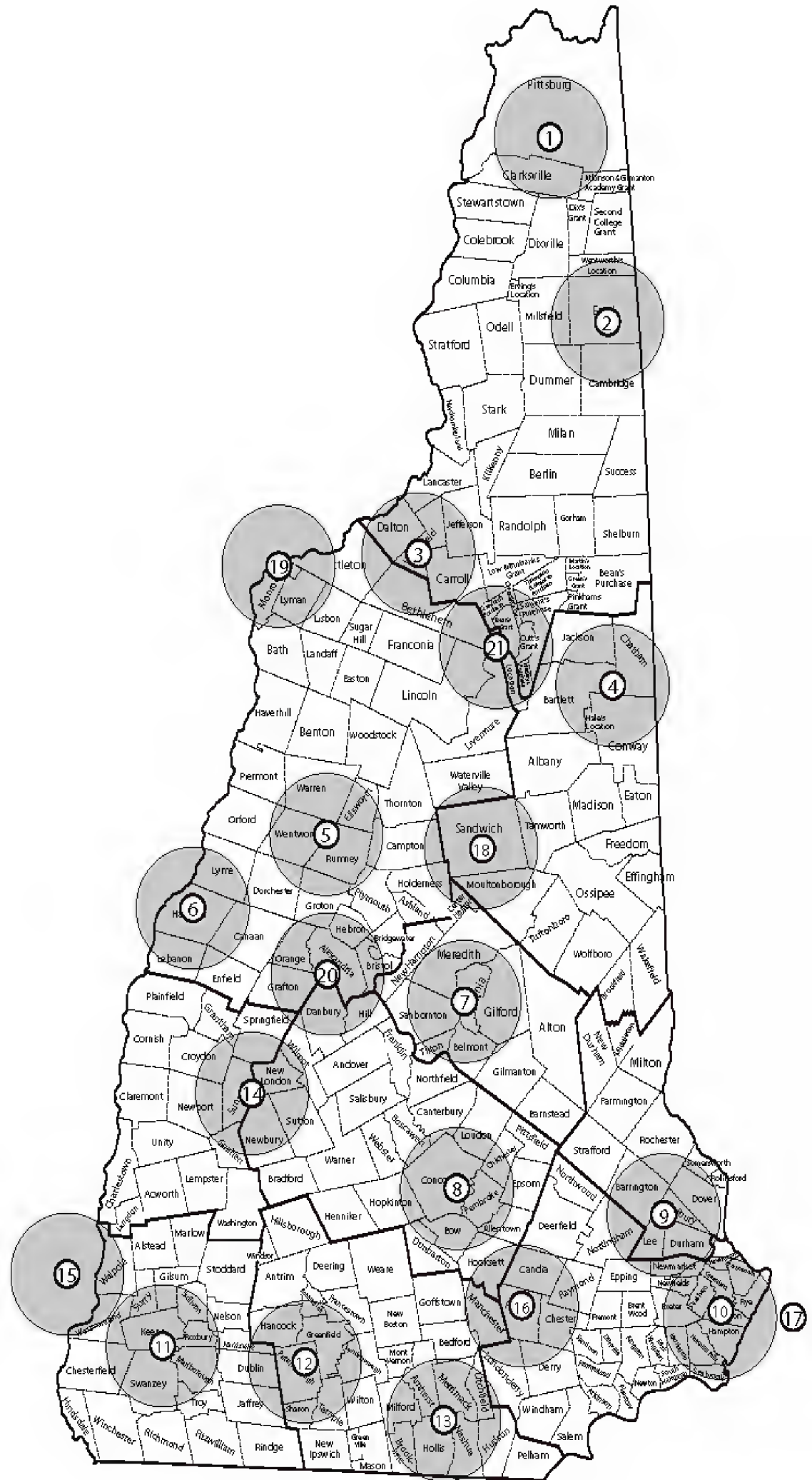
In addition to the 23 counts listed above which originally started before 1950, there were four other counts run in the 1950–1960 period which have since been discontinued: Gorham–Pinkham Notch in 1960–1961, Monroe in 1951, and Passaconaway in 1956.

The modern era of CBCs began in 1950. From that time forward CBCs were run on a consistent basis with larger numbers of participants. Under the modern rules, local volunteers conduct the CBCs for the National Audubon Society between mid-December and early January in a 15-mile diameter circular count area. Observers conduct each CBC on a single calendar day. The single greatest catalyst for the growth of the CBC in New Hampshire was Tudor Richards. He initiated the Coastal New Hampshire CBC, the most productive count in the state. That same year he and his wife Barbara also initiated the Pittsburg CBC, and he started the Laconia count in 1947, but it was not run again until 1950 since when it has been run annually. Tudor also went on to start the



Christmas Bird Count Map Legend

1. Pittsburg
2. Errol-Umbagog
3. Littleton
4. North Conway
5. Baker Valley
6. Hanover-Norwich
7. Laconia-New Hampton
8. Concord
9. Lee-Durham
10. Coastal
11. Keene
12. Peterborough-Hancock
13. Nashua-Hollis
14. Lake Sunapee
15. Saxtons River (Vt.-N.H.)
16. Manchester
17. Isles of Shoals
18. Sandwich
19. Barnet (Vt.-N.H.)
20. Grafton-Bristol
21. AMC Crawford Notch



Concord count in 1964. Many of these modern counts have been continued under the auspices of local Audubon Society of New Hampshire chapters and remain associated with these local chapters to this day.

There are presently 21 CBCs that are considered New Hampshire counts. However, 2 of those counts have significant overlap with neighboring states. The Hanover–Norwich count significantly extends into VT, and the Isles of Shoals count has significant territory in ME. There are two VT counts that have significant overlap with New Hampshire, those centered in Barnet and Saxton's River; neither is included here.

There are currently 19 CBCs located entirely in New Hampshire. Thumbnail sketches of each follow:

The Coastal CBC is one of the oldest. It began in 1950 and has continued since without missing a single year. Essentially the entire New Hampshire coastline fits into this circle, and its area also includes a large portion of Great Bay. Since this count is along the relatively mild coast and in the more populated southeastern part of the state, it has the most participants and highest species count of any of the CBCs in the state. The Coastal New Hampshire count typically records the largest number of species, averaging over 100 species per count in recent years. Of the 217 species collectively recorded on all CBCs in the state, 196 have been seen on this count. This count has also recorded the highest number ever found in the state on a single count at 106. The average number of participants on this count began modestly and then increased greatly. In the 1950s the average number of participants was only 8, by the 1960s it was 28, in the 1970s it was 39, in the 1980s it was 46, but decreased in the 1990s to 42. The average number of species recorded was 54 in the 1950s, 75 in the 1960s, 89 in the 1970s, 93 in the 1980s, and 88 in the 1990s. In recent years, typically 38 participants count at least 100 species.

The Laconia–New Hampton CBC in the Lakes Region of central New Hampshire is another of the oldest counts. It also began in 1950 and has continued each year with the only exception being in 1955. The average number of participants was 14 in the 1950s, 8 in the 1960s, doubled to 16 in the 1970s, decreased to 12 in the 1980s, and in the 1990s it was 19. The average number of species was 36 in the 1950s, 41 in the 1960s, 49 in the 1970s, 45 in the 1980s, and 53 in the 1990s. This count of late has averaged two dozen participants racking up typically 50 species.

The Pittsburg count is another one of the oldest, having begun in 1950 and continuing to the present except for 1952 and 1956. This count area embraces the Connecticut Lakes region, extends to the Canadian border and includes much boreal habitat. It requires intrepid birders because of its frequent subzero winter temperatures and remote location at the northern tip of the state. This affects the number of participants and potentially the species count. The average number of participants was 4 in the 1950s, 3.3 in the 1960s, 3.8 in the 1970s, 4.7 in the 1980s, and 6.2 in the 1990s. The average number of species recorded was 22 in the 1950s, 25 in the 1960s and 1970s, 26 in the 1980s, and 28 in the 1990s. In recent years 6 hardy birders typically find about 29 species.

The Errol–Umbagog count began in 1958 and is similar to the Pittsburg count in its remoteness, inhospitable climate, and boreal species; its area includes beautiful Lake Umbagog. Often the same hardy souls who participate in the Pittsburg count are also involved in the Errol–Umbagog count. These 2 counts are usually held on consecutive days to facilitate this. The average number of participants has always been low: in the 1960s the average number was 2.6, it was 4.1 in the 1970s, 4.9 in the 1980s, and 6.1 in the 1990s. The average number of species recorded has fluctuated very little and was 24 in the 1960s, 28 in the 1970s, 26 in the 1980s, and 27 in the 1990s. In recent years this count has averaged 7 participants noting 32 species.

The Peterborough–Hancock CBC began in 1959 (known at the time as the Monadnock CBC) and ran until 1962. It resumed again in 1973 with a slightly different count circle (it was moved 3 seconds north and 9 seconds east) as well as a new name and has since run annually. It encompasses the scenic mountainous Monadnock region. The average number of participants was 33 in the 1970s and 1980s and 25 in the 1990s. The average number of species recorded was 36 in the 1970s, 41 in the 1980s, and 42 in the 1990s. This count currently averages 26 participants who typically record 48 species.

The Littleton CBC was an unofficial count in that it was not registered with the National Audubon Society until 2001. It began in 1959 and ran through 1974, resumed again in 1987 and continues to the present. In recent years an average of 7 observers tally 37 species. In 2001 it was registered and became an official count. The circle was moved slightly at that time to avoid a Vermont count.

The Hanover–Norwich count came to be in 1960 and has run every year until the present except for 1963. This count includes a slice of the Connecticut River in the well-populated area of Dartmouth College. The average number of participants was 10 in the 1960s, 14 in the 1970s and 1980s, and 22 in the 1990s. The average

number of species recorded was 29 in the 1960s, 37 in the 1970s, 42 in the 1980s, and 51 in the 1990s. This count has had an average of 26 birders recording 48 species in recent years.

The Lee–Durham CBC began in 1963 and hasn't missed a year since. Its count area abuts the Coastal count circle and includes the part of Great Bay that is not covered by the Coastal count. This is usually the second highest count in the state, averaging 69 species. The weather conditions around Great Bay in a highly-populated part of the coastal plain tend to be moderate in winter and so are often highly productive. The average number of participants in the 1960s was only 3, in the 70s it was only 5, by the 1980s it had increased to 22, and in the 1990s was 25. The average number of species recorded was 23 in the 1960s, 27 in the 1970s, 56 in the 1980s, and 67 in the 1990s. The usual recent number of participants has been 25 counting 73 species.

The Isles of Shoals CBC has been the most erratic of all the counts due to the logistics of arranging for boat transportation and the likelihood of stormy weather on count day. It began in 1964 and ran through 1976 missing only 1966. It has been run sporadically since in 1978 and 1979, 1982, 1985, 1995 and 1997, 1999, 2001 and 2003-05. The center of the count is Duck Island, ME, and most of the count is actually in ME. The southern edge of the count circle includes the New Hampshire islands. It is frigid out on the ocean in winter, but in several recent years about 31 intrepid participants have braved the cold to record about 39 species.

The Nashua–Hollis count began in 1965 and has run until the present with the exception of 1969, 1971, 1975, and 1978. Nashua is a good-sized city in the southern part of the state where the temperatures are usually tolerable in early winter. Of the interior counts, Nashua–Hollis typically has the highest total species, averaging over 60 yearly. The average number of participants in the 1970s was 9, in the 1980s it grew to 23, and in the 1990s it was 29. The average number of species recorded was 43 in the 1970s, 52 in the 1980s, and 60 in the 1990s. In recent years 32 observers have typically recorded 61 species.

The first count in the capital region was actually conducted in 1953 but then was discontinued for 10 years. But in 1964 the Concord CBC began; it has continued through the present without missing a single year. The average number of participants was 14 in the 1960s, 19 in the 1970s, 20 in the 1980s, and 15 in the 1990s. The average number of species recorded was 36 in the 1960s, 41 in the 1970s, 43 in the 1980s, and 51 in the 1990s. This count now averages 19 birders tallying 52 species.

The Baker Valley CBC in the Rumney area was instituted in 1974 and with the exception of 1976 has run every year. This count has a small number of observers, in recent years only 10 participants counting an average 30 species.

The Keene CBC began in 1977 and ran through 1980, then resumed in 1983 through the present. In 1983 the count circle area was slightly redefined when it was moved 2 seconds west. The count currently averages 23 observers recording 48 species.

The North Conway count is a relatively recent addition initiated in 1989. It has run consistently since its inception. It is a popular count with 27 birders finding an average of 34 species.

The Lake Sunapee count began in 1990 and continues into the present. This count is centered around Lake Sunapee in southwestern New Hampshire and has recently averaged 15 participants recording 44 species.

The Manchester CBC is one of the youngest counts. The count circle includes Lake Massabesic and part of the Merrimack River in southeastern New Hampshire. It began in 1995 and usually averages about 42 species found by about 12 observers.

The Sandwich CBC is also very new. This count in the northern part of the Lakes Region also began in 1995 and typically averages 21 birders tallying 38 species.

The two newest counts are the Grafton-Bristol CBC started in 2002 and the AMC Crawford Notch count started in 2005.

Data collected in the statewide CBCs has been very valuable in tracking significant changes in New Hampshire winter bird populations. The data illustrate a variety of patterns of change: increases in some cases, declines in others. Selected examples using approximate statewide totals are as follows. Please see the individual species accounts elsewhere in this volume for more precise numbers in some cases and for overall context in all cases. However, care must be taken not to read too much into the trend data for the Christmas counts, because birding activity in New Hampshire was slow in the 1950s, picked up in the 1960s, peaked in the 1970s, declined in the 1980s, and has rebounded since the late 1990s, and has risen now to the highest level ever recorded. Thus many species recorded on CBCs show the same peaks and valleys, which may reflect the level of enthusiasm for birding

in the state as much as an actual fluctuation in bird populations. However, the magnitude of some increases and decreases is clearly reflective of changes in winter populations as illustrated below.

Canada Goose: counts grew sharply from 2200 in 1990 to 8000 in 2000, then declined to 5700 by 2009.

Bald Eagle: sharp increase from 5 in 1990 to 52 in 2009.

Mallard: modest net increase from 2800 in 1990 to 7000 in 1999, then back down to 5200 in 2009.

American Black Duck: average numbers have remained fairly steady at about 1700 from 1990 to 2009.

Merlin: big increase from 0 in 1990–1994 to 7 in 2009.

American Kestrel: sharp decline from 15 in 1990 to 0 in 2007–2009.

Great Black-backed Gull: increase from 1700 in 1990 to a peak of about 4700 in 1994, followed by a drop to about 1100 in 2009.

Herring Gull: almost no net change from 1990 to 2009 but a peak in between: 11,000 in 1990, 23,000 in 1997, 9000 in 2009.

Wild Turkey: steady sharp increase: 55 in 1990 to about 1475 in 2009.

Red-bellied Woodpecker: 4 in 1990, 20 by 2003, 100 in 2009.

Tufted Titmouse: essentially 0 from 1959–1967, then virtually exponential growth from 1968 to 760 in 1989 and 1500 in 2009.

Carolina Wren: only 3 in 1990; grew to 37 by 2009.

Northern Mockingbird: none in 1959, 10 by 1971, 240 in 1981, peak of 350 in 2004, dropping to 140 in 2009.

American Robin: 0 in 1990, numbers rising but variable until 10,000 in 2006 and in 2008, and 7,000 in 2009.

Northern Cardinal: 0 in 1959 followed by a sharp increase to 450 in 1990, almost 1400 in 2006 and 1100 in 2009.

Purple Finch: numbers show distinct bi-annual peaks with low numbers (under 100) in odd-numbered years 1993–2007 but an average in the 700–800 range in even-numbered years in that period.

House Finch: 1900 in 1990 followed by a peak of about 5400 in 1992 from which there was a steady decline to 1000 in 2009.

Common Redpoll: also shows bi-annual peaks but the opposite of the Purple Finch; often 0 in even-numbered years but an average of about 2000 per year in odd-numbered years.

Pine Siskin: shows the same bi-annual peaks as the Purple Finch.

Pine Grosbeak: shows the same bi-annual peaks as the Common Redpoll.

Evening Grosbeak: a yearly average of about 3000 each year in the 1969–1989 period, a peak of about 4800 in 1991, but an average of only about 450 per year for 1992–2009.

As can be seen, the series of data discloses patterns that would probably not be as evident if looking at only a shorter time frame. The species accounts elsewhere in this volume discuss many of these patterns in greater detail. The annual CBCs will continue to provide a helpful insight into New Hampshire's changing winter bird populations.

Hawk Watching

ERNESTO RUELAS INZUNZA

Introduction

IT IS POSSIBLE that the first published record of raptor migration in the United States is a brief anonymous note published in fall 1756 in the *New Hampshire Gazette*. This record describes an observation of what almost certainly were flocks of Broad-winged Hawks riding thermals and moving in a southeasterly trajectory between Fort Dummer, VT, located less than 3 km south of the city of Brattleboro, and Hinsdale, New Hampshire (May 1960). Since this early report, our understanding of the diurnal raptors of New Hampshire and their seasonal and migration patterns has increased dramatically. This chapter provides a history of raptor migration research and hawkwatching in New Hampshire. Due to space constraints, it is impossible to provide an exhaustive chronicle, so this discussion provides its most significant findings rather than illustrating details of its development.

The chapter addresses 4 questions in an historical context: (1) What are the species that comprise the diurnal raptor assemblage in New Hampshire and how have they changed over time?; (2) What are the known seasonal patterns of occurrence?; (3) What is the present knowledge of the spatial and temporal dynamics of raptor migration?; and (4) What is the raptor migration research agenda and what role do citizen scientists play in it?

Information Sources

Records of the earliest part of this history, ranging up to Europeans from the pre-Victorian era, are either lost or fragmented. These records do not seem to have played a foundational role in our current understanding of raptor migration.

The most accessible source of information is found in the peer-reviewed literature. A second, more abundant source of information derives from the work of citizen scientists and conservationists (as defined by Bonney *et al.* 2009). This written and electronic record is, however, published in gray literature (commonly defined as literature produced outside of commercial publishing channels; see Schöpfel and Farace 2010). These sources are supplemented by information from interviews with long-term hawkwatchers and data from their observations. Information coming from regions beyond the geographic scope of this book is also used.

The Past and Present Composition of the New Hampshire Raptor Species Assemblage

At present, the New Hampshire raptor species assemblage is composed of 19 species (Table 1). References in early works, such as those of John Josselyn (1672) and Jeremy Belknap (1792, both *cit in* Allen 1903) include unequivocal records such as Osprey, Bald Eagle, and American Kestrel, as well as some species impossible to determine due to the unsettled nomenclature of the time. The first comprehensive state list was compiled by Glover M. Allen in 1903 (Allen 1903). This list includes records of 16 species of raptors and its coverage is remarkably complete. Of the 3 species not listed in his monograph, Black Vulture and Mississippi Kite had not yet been recorded in the region and are considered recent colonists, while the Swallow-tailed Kite is listed as hypothetical.

Table 1. Earliest unequivocal state records and status of diurnal raptors of New Hampshire. Status before≤1903 primarily based on Allen (1903) and after≥1986 primarily based on Foss (1994), although many other works are also cited.

Species	Earliest State Record	Status before≤1903	Status after≥1986	References
Accipitriformes (3 families)				
Cathartidae (2 species)				
Black Vulture				
<i>Coragyps atratus</i>	1926	Not recorded	Not breeding	Bent 1937
Turkey Vulture				
<i>Cathartes aura</i>	1882	Not breeding	Breeding 1979	Shelley 1928b, Bagg and Parker 1951, Laughlin and Kibbe 1985
Pandionidae (1 species)				
Osprey				
<i>Pandion haliaetus</i>	1792	Breeding 1872	Breeding	Belknap 1792, Dearborn 1898, Allen 1903
Accipitridae (12 species)				
Swallow-tailed Kite				
<i>Elanoides forficatus</i>	1875	Not breeding	Not breeding	Bent 1938 but see Allen 1903
Mississippi Kite				
<i>Ictinia mississippiensis</i>	2008	Not recorded	Breeding 2008	Donsker 2008
Bald Eagle				
<i>Haliaeetus leucocephalus</i>	1756	Breeding 1903	Breeding	Belknap 1792, Allen 1903, Comey 1904, May 1960
Northern Harrier				
<i>Circus cyaneus</i>	1792	Breeding 1898	Breeding	Belknap 1792, Dearborn 1898
Sharp-shinned Hawk				
<i>Accipiter striatus</i>	1868	Breeding 1868	Breeding	Coues 1868, Sage 1885
Cooper’s Hawk				
<i>A. cooperii</i>	1870	Breeding 1870	Breeding	Samuels 1870, Comey 1904
Northern Goshawk				
<i>Accipiter gentilis</i>	1877	Breeding 1897	Breeding	Goodhue 1877a, Dearborn 1898, Hoffmann 1904
Red-shouldered Hawk				
<i>Buteo lineatus</i>	1877	Breeding 1893	Breeding	Goodhue 1877a, Dearborn 1898, Allen 1903
Broad-winged Hawk				
<i>B. platypterus</i>	1756	Breeding 1898	Breeding May 1960	Allen 1903, Dearborn 1898,
Red-tailed Hawk				
<i>B. jamaicensis</i>	1868	Breeding 1868	Breeding	Coues 1868, Comey 1904
Rough-legged Hawk				
<i>B. lagopus</i>	1877	Not breeding	Not breeding	Goodhue 1877a
Golden Eagle				
<i>Aquila chrysaetos</i>	1831	Breeding 1831	Not breeding	Nuttall 1832, Allen 1903, Shelley 1931a
Falconiformes (1 family)				
Falconidae (4 species)				
American Kestrel				
<i>Falco sparverius</i>	1877	Breeding 1877	Breeding	Goodhue 1877a, Allen 1903
Merlin				
<i>F. columbarius</i>	1792	Not breeding	Breeding 1994	Belknap 1792, MacLeod 2009a
Gyr Falcon				
<i>F. rusticolus</i>	1891	Not breeding	Not breeding	Allen 1903
Peregrine Falcon				
<i>F. peregrinus</i>	1888	Breeding 1898	Breeding	Allen 1903, Brewster 1925, Hickey 1942

A comparison of the pre-1903 to the post-1994 periods demonstrates that patterns of distribution are not fixed but dynamic. The membership of this species assemblage has changed relatively little in the 110 years since Allen's publication in spite of large-scale changes in forest cover. Five changes in status are documented throughout this period: in chronological order, these are the loss of breeding Golden Eagle, last nesting successfully in 1956 (Foss 1994); the presence of Black Vulture in 1926 (Bent 1937); Turkey Vulture's first breeding record in 1979 (Laughlin and Kibbe 1985); Merlin as a breeder in the state since at least 1994 (MacLeod 2009a); and records of Mississippi Kite presence and breeding in 2008 (Donsker 2008b). The Bald Eagle, a breeding species in the pre-1903 period, had no records of nests from the late 1940s until 1989 (Foss 1994). Three of the changes listed above reflect broader range expansions of birds with southern distributions colonizing the state (Turkey Vulture, Black Vulture, and Mississippi Kite); the remaining one (Merlin) reflects the southward range expansion of a northerly-distributed bird. It is unclear whether the loss of breeding Golden Eagles in New Hampshire can be attributed to a northward range retraction, habitat loss, direct persecution, or a combination of factors.

Seasonal Patterns

Breeding and summer residents. Seasonal patterns of New Hampshire raptors were generally well understood by the time of Allen's checklist (7 species were known to breed in the state by that time; Allen 1903). Additionally, papers published in *The Auk* from 1885–1951 (as well as publications from surrounding states) documented breeding, migratory, and nonbreeding status in detail.

Sage (1885) published the first such paper, documenting the presence of Sharp-shinned Hawks in the winter. Subsequently, other articles documented breeding records (Hoffmann 1904), winter records (Norton 1933), and the breakdown of subspecific affinities of raptors in the state (Shelley 1935c). By the end of the 20th century, Foss (1994) had documented 12 species breeding with just 2 additions after the publication of the *Atlas of Breeding Birds in New Hampshire* (Table 1).

Migrants. All raptor species reported in the state exhibit some form of migration. Two species are obligate migrants (species whose breeding range is disjunct from nonbreeding range, treated as *total migrants* by Bildstein 2006): Mississippi Kite, and Broad-winged Hawk. The remaining are facultative migrants (breeding and nonbreeding ranges overlap to some extent, treated as *partial migrants* by Bildstein 2006); these include two considered *irruptive* (migration observed following cycles extending several years and treated as irregular *invasions* in some of the older literature): Rough-legged Hawk and Northern Goshawk. General distributional works list 3 species of facultative migrants as entirely absent from New Hampshire during the nonbreeding season: Red-shouldered Hawk (Crocoll 1994), Merlin (Sodhi *et al.* 1993), and Peregrine Falcon (White *et al.* 2002). Although the largest proportion of their populations is indeed absent from the state, the year-round presence of individuals of all 3 species in the state has been confirmed through records during the nonbreeding season (*New Hampshire Bird Records* database).

Winter residents. Three species whose breeding ranges are located north of New Hampshire are recorded in the state only during the nonbreeding season: Rough-legged Hawk, Golden Eagle, and Gyrfalcon (Table 1).

Spatial and Temporal Dynamics of Raptor Migration in New Hampshire

Our knowledge of the dynamics of migration has come mainly from hawkwatchers. Hawk flights are conspicuous and for a long time were documented in the literature as incidental reports; e.g., an observation by Forbes and Forbes (1927) reporting a flock of 30–40 “hawks . . . turning and soaring upwards in irregular steep spirals . . . probably *Buteo*,” in mid-September from atop Mount Monadnock.

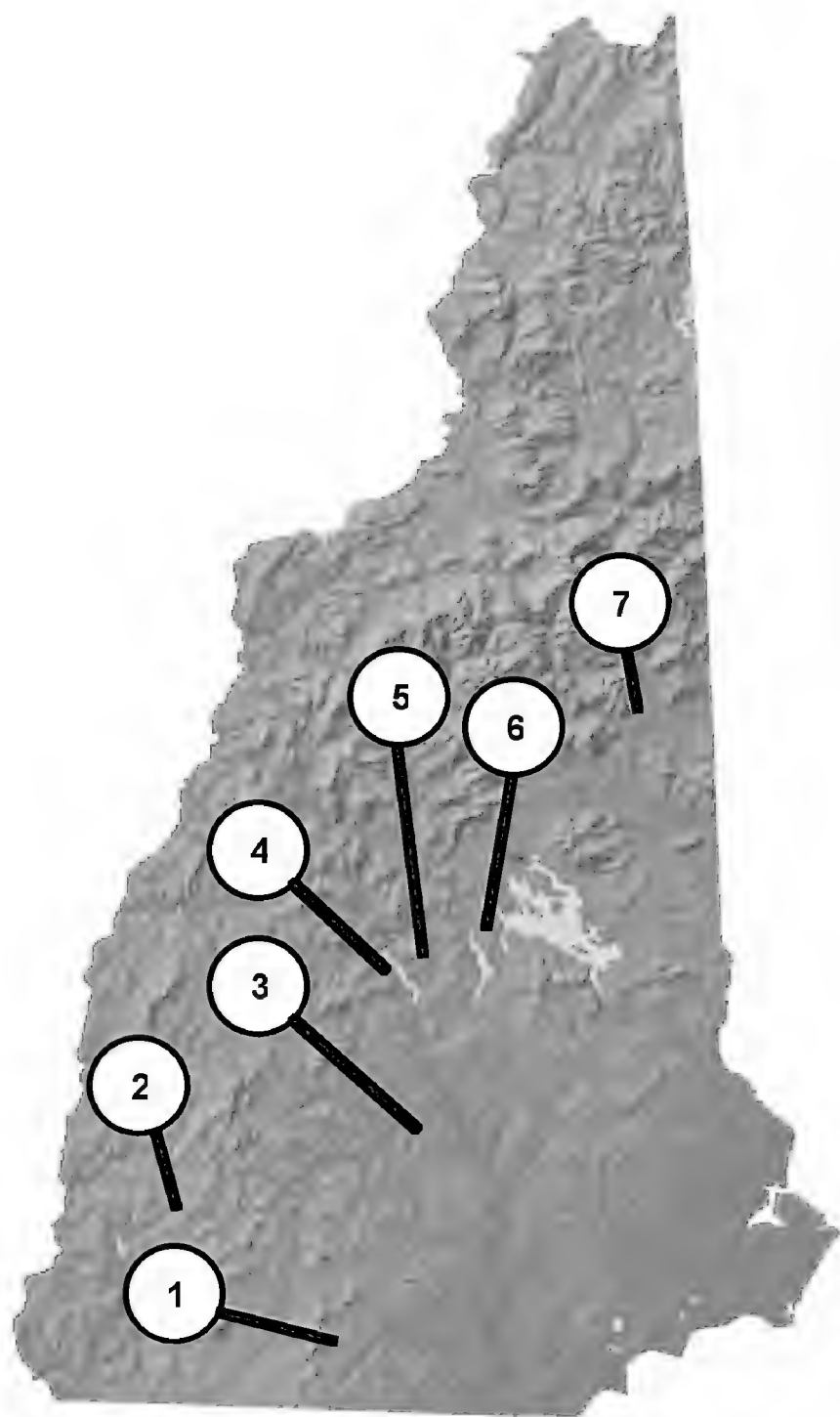


Figure 1. Some raptor migration monitoring sites in New Hampshire. (1) Pack Monadnock Raptor Migration Observatory, (2) Pitcher Mountain, (3) Carter Hill, (4) Little Round Top Migration Observatory, (5) Peaked Hill, (6) Interlakes Elementary School, and (7) Black Mountain. Source: HMANA archives and HawkCount.org. There are other significant hawk watch sites in New Hampshire not shown on this map, including Odiorne point State Park in Rye and the Lebanon Airport.

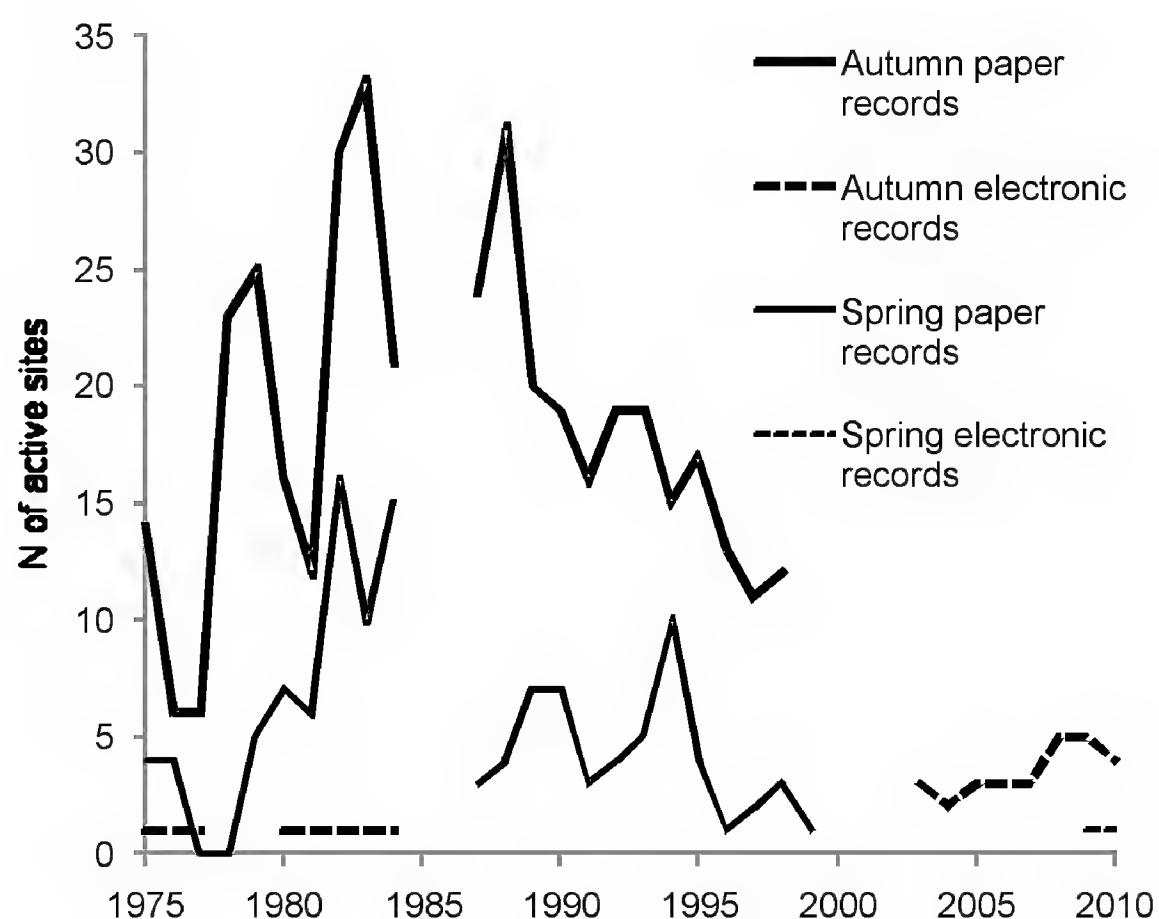


Figure 2. Records of migration monitoring sites in New Hampshire held by the Hawk Migration Association of North America (HMANA) in paper and electronic archives, 1975–2010. Paper records only include 1975 (foundation of HMANA) to 1998; electronic records from 2003 onward (beginning of HMANA's HawkCount.org). Data courtesy of HMANA.

Susan Fogleman (2001) wrote an account of the history of hawkwatching in New Hampshire, and an excerpt from her introduction summarizes the earliest systematic efforts to study raptor migration: “The first New Hampshire effort was made near New Ipswich in the 1950s (Tudor Richards in an interview with Cole 1972). Peaked Hill in Bristol was discovered by the late Vera Hebert (pers. comm.) to be an excellent site not long after that. By 1960 Hebert and [Robert W.] Smart had begun monitoring hawk flights there every fall, although not on a daily basis. An item in the fall 1960 bird reports section of *NH Audubon Quarterly* (Smart 1961) suggests that the importance of hawk migration monitoring was becoming more and more apparent to them and to New Hampshire Audubon members...” (Fogleman 2001).

In 1969, observations began at Little Round Top (ca. 1.5 km SSE of Bristol and also known as “Inspiration Point” or simply “Bristol” in older records), the longest continually-staffed site in the state (Fogleman 2001, Fig. 1). During the late 1960s and early 1970s, observations were collected at 2–3 autumn sites in the state and records were submitted to New Hampshire Audubon (Smart 1960, 1969) and later to the Hawk Migration Association of North America (HMANA) after its founding in 1974 (Harwood 1975).

The data submitted to HMANA illustrates a dramatic increase in short-term observations of potential sites to monitor migration (a total of 171 different-named locations have been explored according to these records, some of them undoubtedly redundant; Fig. 2) with a peak in the early 1980s. As many as 16 different-named sites submitted at least 1 day of observations per season to HMANA in the spring of 1982 and 33 sites in the autumn 1983; the majority of these observations, however, were very short in duration, as most of them consist of records submitted over 1 or 2 seasons. Many fewer sites continued systematic observations over the long term, and nearly a dozen reached 10 or more years of data with seasonal coverage spanning 20–60 days per season (primarily in the autumn). Only 3–4 of these maintain season-long activity today.

Species	Little Round Top			Pack Monadnock		
	Mean Autumn Count	Max. (Year)	Min. (Year)	Mean Autumn Count	Max. (Year)	Min. (Year)
Turkey Vulture	18	33 (2005)	4 (2003)	94	142 (2010)	29 (2005)
Osprey	51	75 (2009)	37 (2003)	292	438 (2009)	219 (2005)
Bald Eagle	34	56 (2009)	24 (2003)	65	100 (2009)	50 (2008)
Northern Harrier	4	8 (2009)	2 (2006)	97	173 (2009)	24 (2005)
Sharp-shinned Hawk	89	123 (2006)	43 (2008)	1302	2377 (2009)	519 (2005)
Cooper’s Hawk	26	55 (2009)	9 (2003)	175	292 (2009)	47 (2005)
Northern Goshawk	2	3 (2003)	1 (2007)	41	59 (2010)	11 (2005)
Red-shouldered Hawk	—	—	—	79	174 (2009)	23 (2005)
Broad-winged Hawk	1888	3736 (2004)	389 (2005)	7485	11,157 (2009)	3978 (2005)
Red-tailed Hawk	20	36 (2005)	11 (2003)	303	670 (2009)	118 (2005)
Golden Eagle	2	2 (2006)	1 (2008)	6	10 (2009)	2 (2008)
American Kestrel	24	34 (2009)	14 (2008)	189	318 (2009)	78 (2005)
Merlin	2	4 (2007)	1 (2003)	82	141 (2010)	40 (2005)
Peregrine Falcon	3	5 (2006)	1 (2004)	33	51 (2010)	11 (2005)

Table 2. Records of migrating raptors observed at Little Round Top Migration Observatory, Bristol, New Hampshire, (2003–2009, average start date: Sept. 3, average end date: Sept. 20) and Pack Monadnock Raptor Migration Observatory, Peterborough, New Hampshire, (2005–2010, average start date: Aug. 31, average end date: Nov. 8). Data courtesy of Susan Fogleman (Little Round Top) and Iain MacLeod, Julie Brown, and New Hampshire Audubon (Pack Monadnock).

Pack Monadnock, a site near Peterborough with observations dating back to the late 1960s, has submitted data forms to HMANA since 1975 and electronic records to HawkCount.org (HMANA's online information system). From recent electronic submissions (n=6 field seasons, 2005–2010), autumn migration phenology graphs were created for 14 species (Fig. 3). The migration of the remaining 5 species is not documented during the standard field coverage of this site or their movements are too scarce to have been recorded onsite.

According to Fogleman (2001 and earlier papers in NHBR) and MacLeod (2009b), autumn migration follows a NE-to-SW general direction, placing the general origin of New Hampshire's migrating raptors in northern and central ME, eastern Quebec, and the Maritime Provinces. These flights, (ca. 12,000 raptors per season at Pack Monadnock; Table 2), are modulated locally by a combination of topographic and weather factors that have not been explored quantitatively.

An Agenda of Raptor Migration Research in New Hampshire and the Role of Citizen Scientists

History and information on raptor migration in New Hampshire originates in incidental reports during its early years. At present, synthesized information appears largely in local and state distributional works and from a few analyses of broad survey data centered on the larger New England region (Duncan 1996, DeStefano 2005); most of the source data have been collected by bird- and hawkwatchers, citizen scientists interested in tracking raptor population change over time, typically available through HMANA and eBird. To create a comprehensive synthesis, information from published literature, museum specimens, and observational data must be combined. Below is a list of underused tools that have been developed relatively recently that could help achieve this synthesis.

Published literature. Publications in the peer-reviewed literature are now much more accessible. Complete runs of major journals are available and searchable in electronic form through the Searchable Ornithological Research Archive hosted by the University of New Mexico (<http://elibrary.unm.edu/sora/>). Depending on the journal, issues as recent as 2008 are available; access is free. More recent journal issues are available in electronic databases through academic libraries.

Peer-reviewed periodicals, however, have largely shifted their emphasis to hypothesis-driven research and their interest in documenting records and reports has decreased over time. This leaves regional and state investigations to gray literature outlets (Schöpfel and Farace 2010) or to not be published at all (Yamasaki *et al.* 2007). The most information-rich sources for a comprehensive synthesis are precisely these regional works (unpublished technical reports, e.g. Martin 2005, 2006, and journals with a state emphasis such as NHBR). They are currently not available online or not accessible at all. Efforts to overcome this problem include The Peregrine Fund's Global Raptor Information Network (<http://www.globalraptors.org/grin/indexAlt.asp/>), which maintains an updated database of publications and experts by species and geographic region; and Ornithological Worldwide Literature, a joint effort by the American Ornithologists' Union, the British Ornithologists' Union, and Birds Australia hosted by the Cornell Lab of Ornithology (<http://www.birdlit.org/OWL/>).

Museum specimens. Holders of large collections have made great advances in computerizing their extensive records; these have received little attention in research to understand migration. Forty-two of the most important collections from 5 countries are federated in the Ornithology Information System (ORNIS) hosted by the University of California at Berkeley and the University of Kansas (<http://www.ornisnet.org/>) and their resources are searchable and open to the public.

Observational data. Hawkwatchers have made perhaps the most significant contribution to the existing knowledge of raptor migration and their contribution could be even greater. Migration count datasets are invaluable to track population change in migratory raptors (Bildstein *et al.* 2008), to determine aspects of their migration ecology such as phenology (Kerlinger 1989, Ruelas and Tilden 2009), to study local and regional effects of topography and weather on migration (Fogleman 1993, Allen *et al.* 1996), and to educate the public.

Historical datasets need to be converted from paper archives into electronic form and placed in repositories such as HMANA's HawkCount.org (<http://www.hawkcount.org/>). Data from migration monitoring sites needs

to be sustained, made more systematic (e.g. collected daily during a field season that captures 95% of the “migration window” for species of interest), optimized in geographic and seasonal coverage (missing in the great north woods region and the coastal lowlands with a smaller portion of the data coming from spring sites), and published in the scientific literature, so it can serve as a decision-making tool for wildlife management and conservation by state and federal agencies. No dataset from New Hampshire has been used to analyze population trends of raptors to date.

The contribution of raptor banding stations is an essential initial step to establish patterns of migratory connectivity (Webster *et al.* 2002). Although a few banding efforts are known for New Hampshire (such as nest box programs for American Kestrels and other nesting raptors), data from nearby migration banding stations such as the South Newbury Raptor Banding Station near Newbury, VT, needs to become accessible. Appropriate repositories such as the Cornell Laboratory of Ornithology’s Avian Knowledge Network (<http://www.avian-knowledge.net/>) have recently enabled tools for archiving banding data.

In short, a comprehensive synthesis of raptor migration in New Hampshire is much needed; its completion would be a culmination for its rich history and a powerful incentive to sustain the work of citizen scientists into the future.

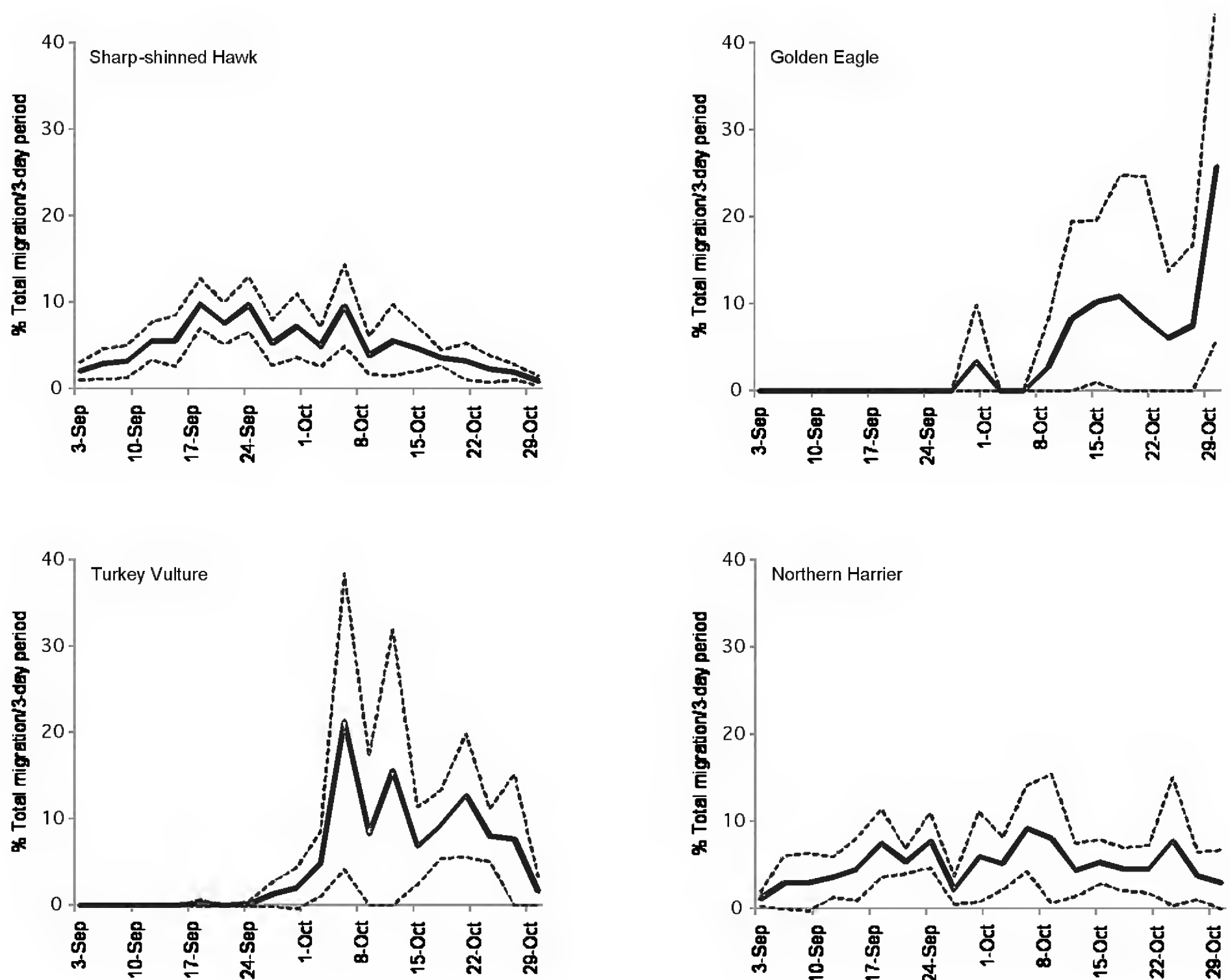
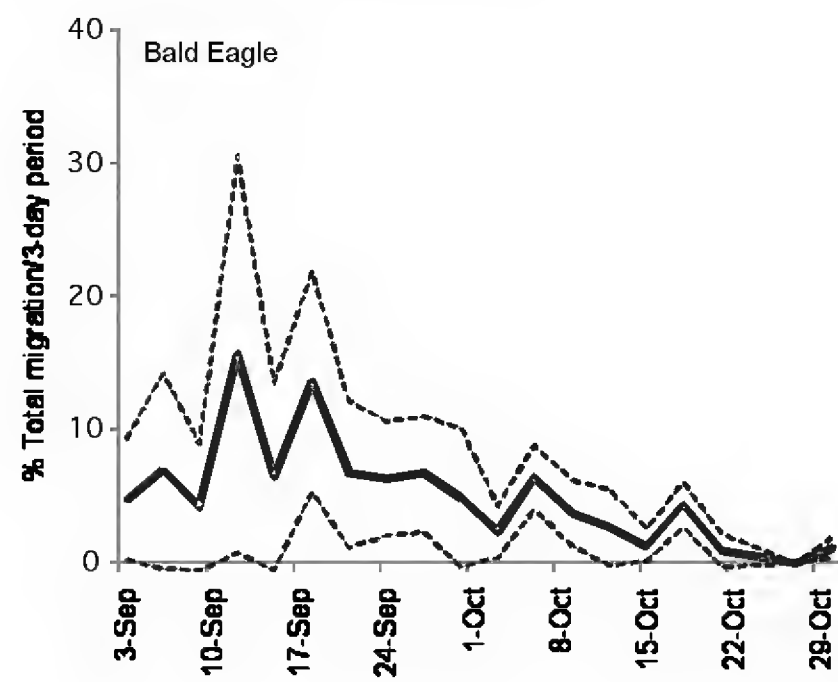
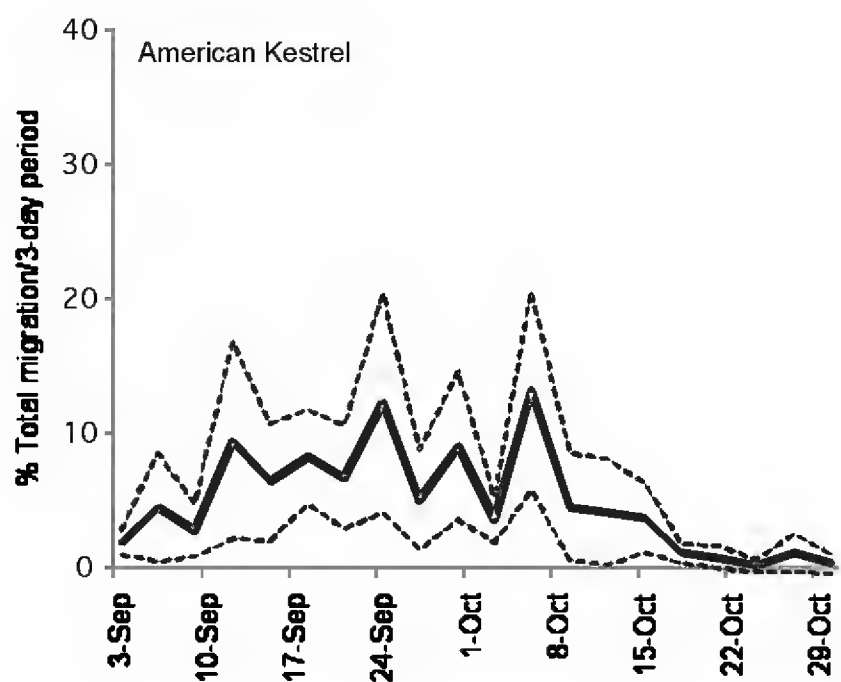
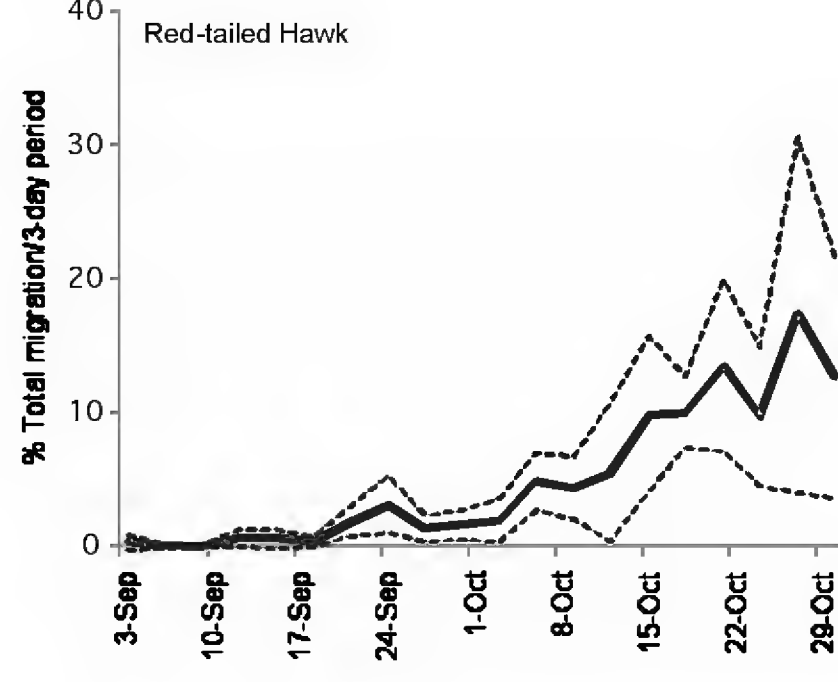
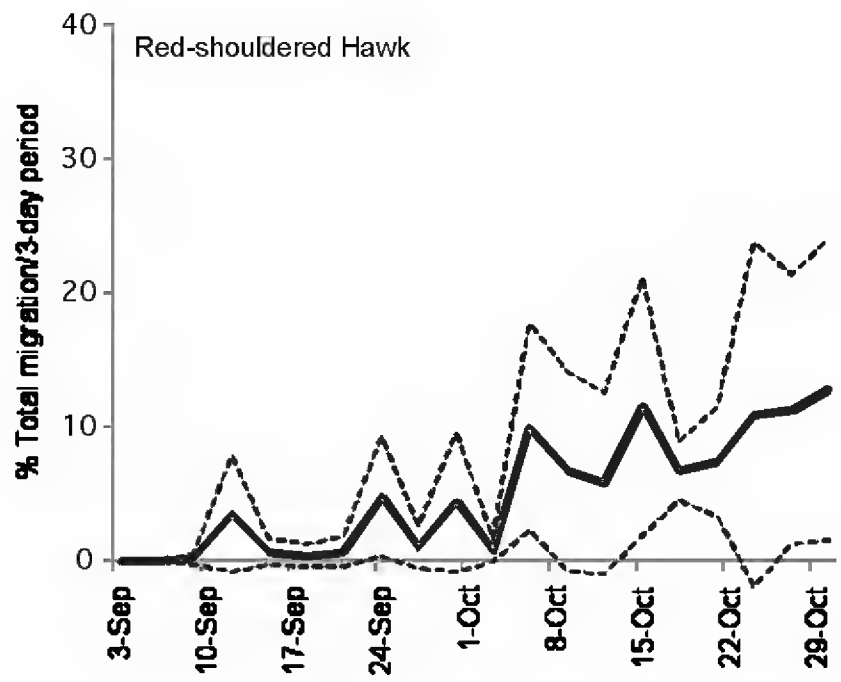
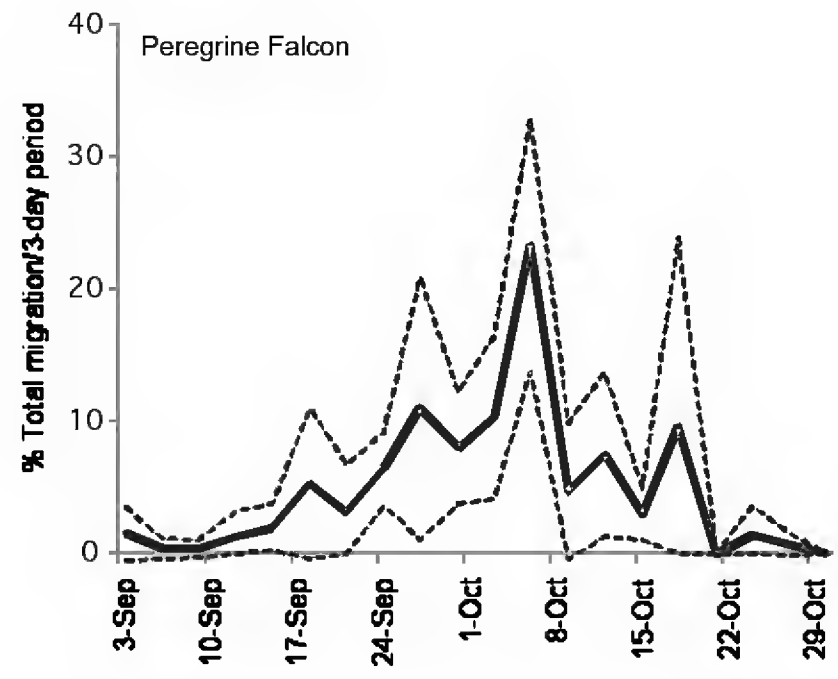
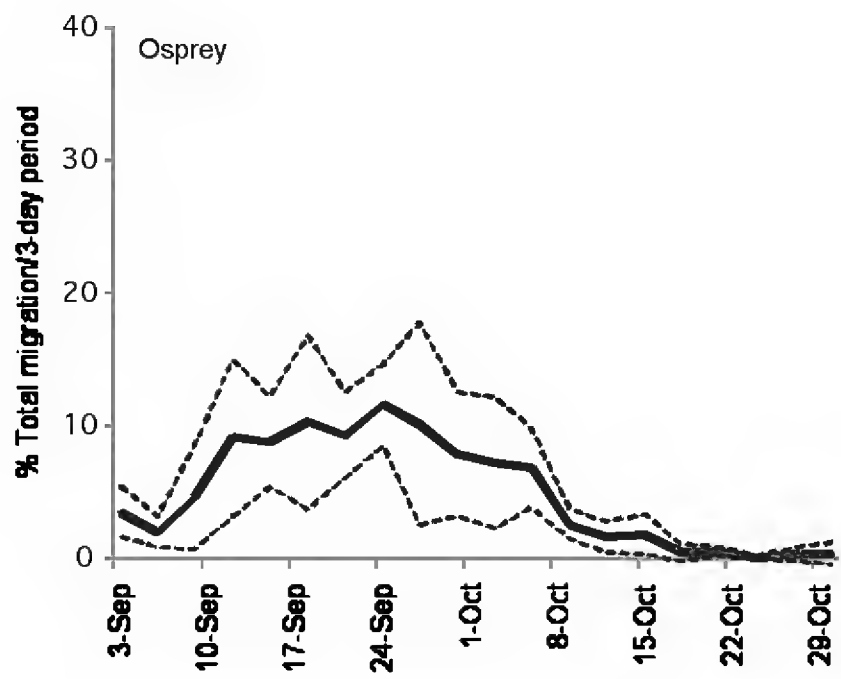
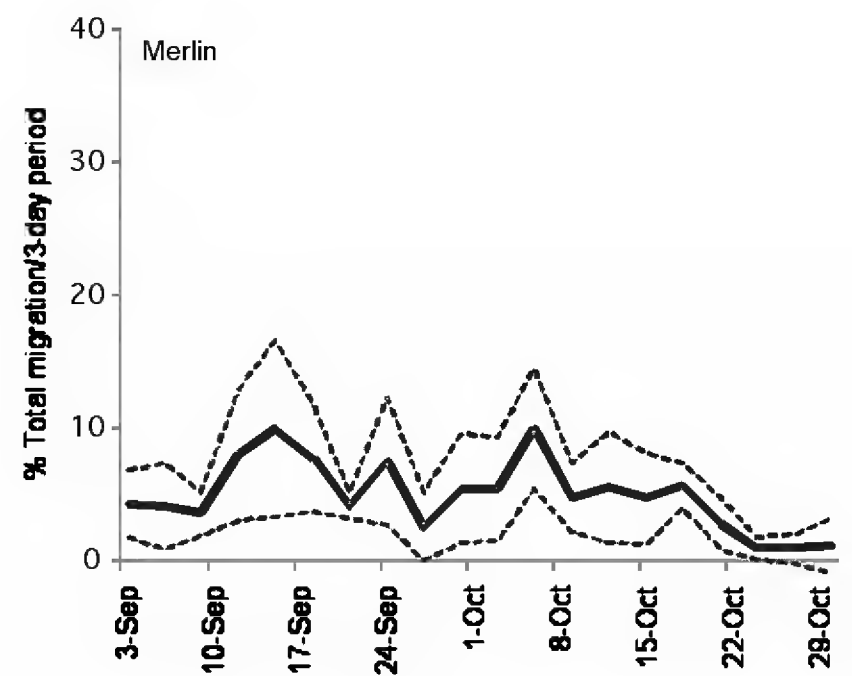
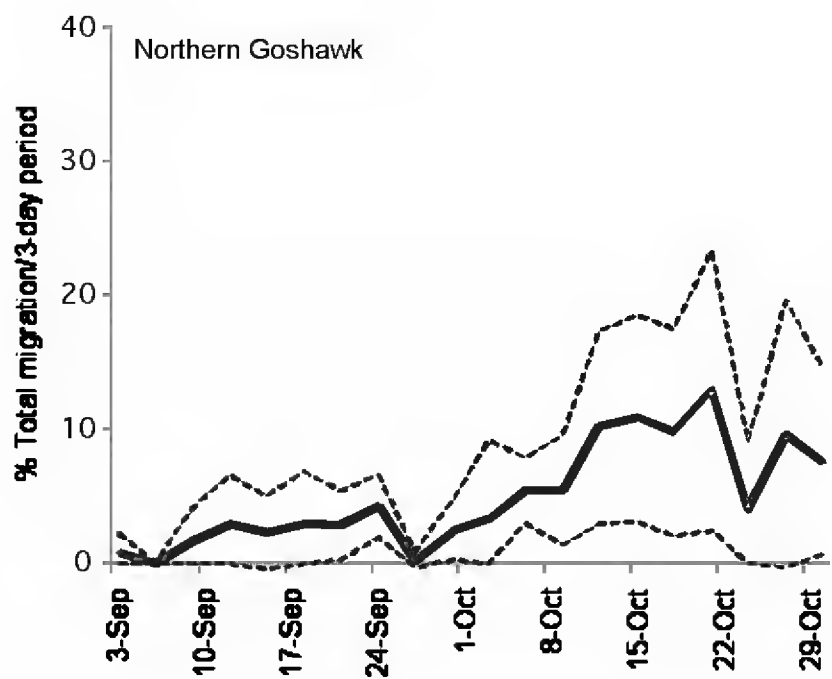
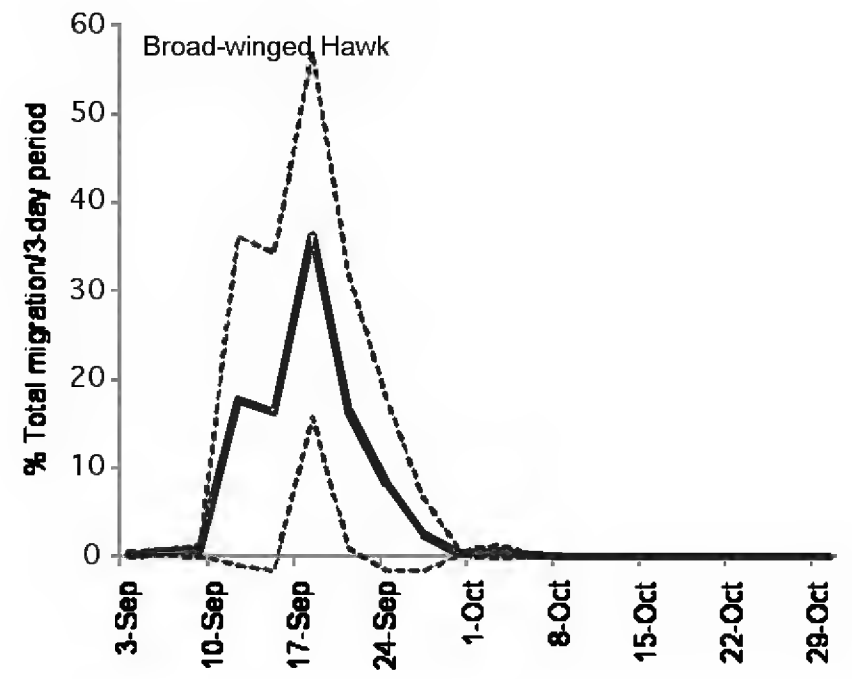
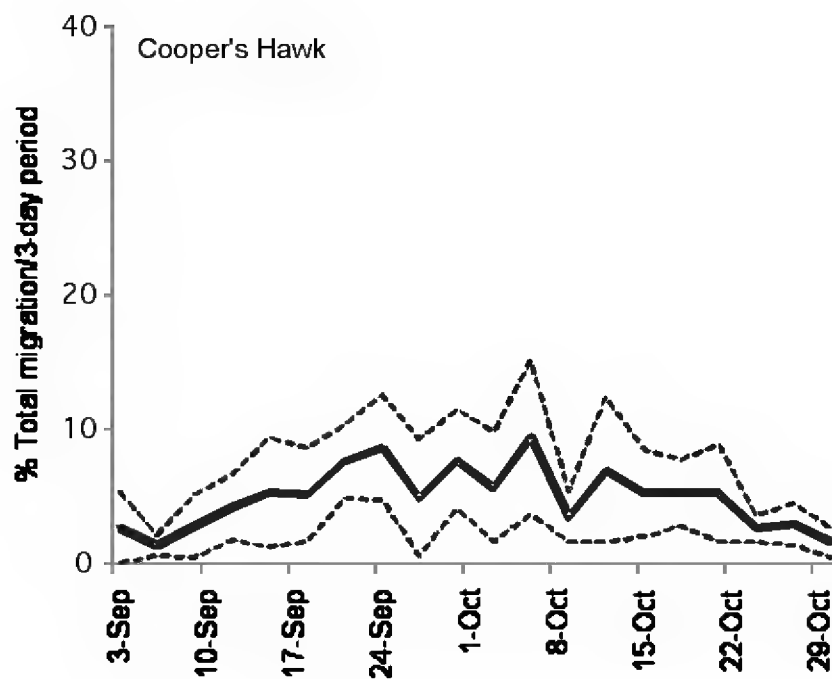


Figure 3. Migration phenology of 14 species of diurnal raptors in New Hampshire, based on autumn records from Pack Monadnock 2005–2010 (spring migration data are not available in electronic form). Solid line=mean number recorded, dashed lines=95% confidence intervals. Data courtesy of Iain MacLeod, Julie Brown, and New Hampshire Audubon.





Acknowledgements

Susan Fogleman operated the Little Round Top migration monitoring site during 30 (of its 40) years of history and provided me with valuable information to guide the writing of this account. I thank Iain MacLeod and New Hampshire Audubon for allowing me to use Pack Monadnock's data and for his comments on a draft of this manuscript; Julie and Phil Brown also contributed significant insights and comments. Data on HMANA's archives was provided by Laurie Goodrich, its curator. Rebecca Suomala helped locate the May (1960) reference in NHBN. This paper was written while a postdoctoral fellow at Dartmouth College with funds provided by the Hawk Migration Association of North America and the Howard Hughes Medical Institute.

SPECIES ACCOUNTS

The name of the observer or collector usually follows the date of observation in parentheses and is limited to one or two initials and the last name, except in the case of a few older records where we could only find a surname and 1 or 2 instances where we only have the observers' initials. If several or many observers were present, the name of the group leader and occasionally the names of 1 or 2 other experienced observers will be listed. The name of the person who found the bird is listed first when we know that information. We are aware of 4 instances where observers' surnames have changed during the period covered. We have elected to use the most recently-used surname in each case and have converted all surnames that appeared in print earlier to the present or most recent surname used. This may lead to some confusion for those who want to track older records for which we apologize, but we felt that consistent use of one name for a single observer was the better approach. The 4 observers whose names have been changed are: Carol Foss, formerly C. Smith, Sandy Turner, formerly S. Bogert and S. Mallett, Susan Fogelman, formerly S. Gonzalez, and Vera Hebert, formerly V. Wallace.

ORDER ANSERIFORMES

FAMILY ANATIDAE

Pink-footed Goose *Anser brachyrhynchos*

Status. Vagrant from Greenland or northern Europe; 1 record. One appeared in Walpole on 2 Apr 2011 (T. Schottland, D. Clark, G. Tillman, L. Medlock, J. Mirick *et al.*; photo by S. R. Mirick NHBR 30 [1] back cover); only seen that day. There is 1 hypothetical record for VT in 1999 (C.C. Rimmer pers. comm.); 2 records from ME, both in Oct 2009 (W. Shanahan pers. comm.); and 3 records for MA in 1999, 2009, and 2010 (BO database 2011), not including a specimen from 1924 suspected of being an escape (Griscom and Snyder 1955). The increase in New England Pink-footed Goose reports since the late 1990s is probably related to an increase in that species' breeding population in Greenland and the colonization of Greenland by breeding Canada Geese which migrate back to the eastern United States, occasionally bringing Pink-footed Geese with them (Sherony 2008).

Greater White-fronted Goose *Anser albifrons*

Status. Rare visitor, appearing more frequently 2000 to date. Only found in October–December and March–May. No specimen is known for the state. All records but 1 are south of the latitude of the Lakes Region and most are from the 2 major river valleys in the interior. See also the summary by Masterson (2004d).

The first state records of presumed wild birds are an immature at Great Bay 17 Nov 1962 (K.C. Elkins) and an adult at Durham 18 Oct 1964 (A.C. Borrer), both in flocks of migrant Canada Geese. Since then there have been 30 additional reports, 7 more in fall and 23 in spring. There has been 1 report in October, an adult and

an immature at Hollis 20–23 Oct 1990 (J. Broyles, M. Suomala); 5 reports in November; and the latest on 14–17 Dec 1988 at Allenstown (G. Collins, V. Hayden). The earliest spring report is 1 at Kingston 14 Mar 2004 (M.G. Harvey). There are 10 other reports in March including the peak count of 5 at Hinsdale 18 Mar 2007 (E.A. Masterson), surprisingly none in April, and 3 reports in May, the latest of which is 1 at Laconia 17–19 May 2005 (H.C. Anderson *et al.*).

Taxonomic note. It has been assumed here that pre-1980 records especially and the other records listed above have been of the North American breeding population *A. a. frontalis*. However, the Greenland breeding population *A. a. flavirostris* is known to have been increasing since 1980 (Sherony 2008), and 5 birds have been identified as that race since then: 1 with Canada Geese at Pease Air Force Base 15 Dec 1990 (*fide* A.C. Borrer), 1 at Great Bay 21 Nov to about mid-Dec 1997 (A. Delorey *et al.*), 1 at Durham 4 Mar 2000 (D.B. and T. Donsker *et al.*), 1 at North Hampton 6 Apr 2000 (S.R. Mirick) and probably the same bird still present there 27 Apr 2000 (D.B. Donsker), and 1 at Concord 15–24 Apr 2000 (P.D. Hunt, J.C. McIlwaine). Ely and Dzubin (1994) suggest that *flavirostris* Greater White-fronted Geese often migrate from Greenland in company with Cackling Geese that also breed there.

Snow Goose *Chen caerulescens*

Status. A regular transient in spring and fall both inland and along the coast, though somewhat more frequently noted in spring. Two races have been taken in the state. The race *atlantica* is thought to account for the majority of the spring records. The race *caerulescens*, which has both a white and a “blue” morph, is thought to account

for the majority of the fall reports, though it has also been recorded several times in spring. Both races were probably common in the precolonial period, then declined from about 1700 until at least the 1930s, particularly the race *atlantica*. Since then, the frequency of both races has increased, *atlantica* the most, and numbers have grown sharply in the last 20 years.

Early reports to 1900. The “white Geese which are bigger” than Brant mentioned by Morton (1632) and both the “White Goose, *Anas erythropus*,” and the “Bluish Goose, *Anas caerulescens*,” given by Belknap (1792) surely belong here. Forbush (1912) states that this species was once about as common in MA as the Canada Goose, so as stated by Richards (1952a): “we can probably assume that in colonial days it was at least as common in New Hampshire.” As Richards (1952a) continues: “Forbush (1925) describes the species as largely disappearing during the seventeenth and eighteenth centuries, implying that this was due to overshooting. It became so scarce that most records for Snow Geese in New England in the latter part of the nineteenth century were fall records, apparently of the race *caerulescens*, the western subspecies, the continental population of which remained abundant. Allen (1903) did not even list the Greater Snow Goose (race *atlantica*) for New Hampshire, assuming that six reported to have been seen in Seabrook in 1895 or 1896 (*fide* A.A. Eaton) were the smaller subspecies.” The first definite record of the modern era is 2 shot at Cambridge on the shore of Lake Umbagog 2 Oct 1896 by Charles Douglas and purchased from him by Brewster (1924). Brewster determined both to be what is now called the race *caerulescens*: 1 white morph (MCZ #330028) and 1 blue morph (MCZ #180401). Griscom (1948) noted that it was an abundant migrant in colonial times, was extirpated by 1860, but with protection increased sharply 1928–1948.

1900 to 1950. From the low point in the first decade of this period, there was a gradual increase in records of *caerulescens*, the blue morph of which can be identified in the field, and the beginning of a rapid increase of *atlantica* in spring. Following are all the known reports in this period. One shot at Hampton about 10 Oct 1902 by S. A. Shaw was assigned by Goodhue (1922) to *caerulescens*. The next record is that of 1 or more found in the Hanover area in Nov 1914 (Lord 1918). A flock of over 100 was seen at East Jaffrey 15 Apr 1916 (Danforth 1917a). A flock of 75 appeared at Forest Lake, Winchester, 15 Apr 1937 and 1 was collected by L. R. Nelson for his personal collection which he assigned to the race *atlantica* based on its measurements. This identification is the basis for assuming that the majority of spring migrants, especially those appearing in large flocks, belong to this race. An unusual report was one of up to 19 “Blue” Geese at Manchester 2–11 May 1938 (Goellner 1938). Up

to 200 presumed *atlantica* were seen near Hanover 11–15 Apr 1939 (R.L. Weaver), about 200 were at Harrisville 18 Apr 1941 (J.M. Abbott), 100 were seen at Hanover 7–8 Apr 1942 (R.L. Weaver *et al.*), 15 were at Woodsville 18 Apr 1943 (*fide* W.P. Smith), 9 were at Hanover 8 Apr 1944 (D.E. Wade), 15 were at New Hampton 10 Apr 1944 (V.H. Hebert), 10 were at Monroe 24 Mar 1946 (I.F. Hunt), 55 were at Hanover 28 Mar 1946 (W.E. Lanyon), 5 were seen at New Hampton 2 Nov 1946 (V.H. Hebert), and 40 were at Chesterfield 9 Apr 1947 (L.R. Nelson). Blue morphs assumed to be *caerulescens* were found at Pittsburg in the spring of 1948 (F.T. Scott) and 1 was shot at Newmarket in mid-Dec 1949 (Weston). It is clear that spring migrant Snow Geese used primarily the Connecticut River flyway in this period in preference to the coastal route or Merrimack River valley.

1950 to present. Occurrence in the state has increased greatly. Fall occurrence of the race *atlantica* is still not documented by a specimen. As indicated by reports of blue-morph *caerulescens*, this race has been reported more often in recent years in spring than in fall. The following discussion makes no attempt to distinguish between the 2 races except for the blue morphs of *caerulescens*, all records for which are given up to 1980.

Spring. Extreme early arrival of a white form is 6 at New Hampton 14 Mar 1953 (V.H. Hebert), and peak spring migration period is usually the last 2 weeks of March and the first week of April. Peak spring counts in the Connecticut River valley are about 1000 seen at Landaff 1 Apr 1960 (R. Cate *et al.*); 1000 near Haverhill 17 Apr 1994 (L. Buntin); at least 4400 seen at 4 spots along the Connecticut River 31 Mar to 8 Apr 1999 (P.D. Hunt, R.A. Quinn, S.R. Mirick *et al.*); and 10,000 passing Charlestown 18 Apr 1978 (W.W. and G.L. Kidder). Greatest number of spring migrants known from the Merrimack River valley is 2350 at Bristol 6 Apr 1976 (S.A. Fogleman, P.A. Phipps), and highest count known for the coastal region in spring is 1119 at Rye 11 Apr 1976 (A.C. Borrer *et al.*). Latest known spring migrants were noted at Livermore 15 May 2002 (G. Duffy *et al.*), Newmarket 16 May 2002 (S.R. Mirick), and Laconia 19 May 1968 (H.C. Anderson *et al.*), though there are very few May records. A straggler was at Errol 12 Jun 1988 (D. Evans). Unusually large spring flights occurred in 1954, 1962, 1964, 1967, 1976, 1978, and 1999.

There were 14 records for blue-morph birds presumed to be *caerulescens* seen in spring 1950–1980 between extreme dates of 1 at Great Bay 13 Mar 1951 (T. Richards) and 1 at Enfield 9–11 May 1969 (R.W. Smart, K. Overman). Eleven of the 14 records were in April, mostly in the first 2 weeks of that month, and a total of 24 birds were reported, all as singles or 2 birds except for 12 near Hinsdale Dam 10 Apr 1950 (T. Richards). Eight of the records were from the coastal region, 6 from inland. After

1980 “Blue Geese” were seldom reported specifically but were occasionally found in northbound flocks of Snow Geese in March and April. Three were unusually early at Hampton 27 Jan 2007 (T. Bronson *et al.*; photo).

Fall and winter. Extreme early fall arrival date known is 29 Sept 2002 when 315 were at Star Island and the coast (M. Suomala, R.A. Woodward *et al.*) and 51 were at Kensington (D.W. Finch). Peak fall migration period is usually the first 2 weeks of November, and peak fall counts are 1000+ at Walpole 5 Nov 1970 (*fide* G.L. Kidder); 1100+ on 10 Nov 1978 at Monroe (P.A. Phipps *et al.*); 1200 at Lake Sunapee 5 Nov 1977 (M. Howard *fide* R.A. Forster); 4000+ at Littleton 2 Nov 1976 (R.J. Bradley); and 5000 passing over Hanover 17 Nov 1963 (E.H. Sherrard). As in spring, the largest flocks and the most numerous observations have been in the Connecticut River valley; there are no fall counts over 1000 for the Merrimack River valley or the coastal region. A few may linger until late November or early December, rarely into January or February. The latest known records are 1 at Bethlehem 20 Dec 1967 (S. Marsden *et al.*), 1 at Rye 9 Jan 2002 (J.W. Berry), 3 at Greenland 28 Jan 2002 (D.J. Abbott), and 1 at North Hampton 23 Feb 2002 (A. and B. Delorey).

Blue-morph *caerulescens* birds have been reported in fall and winter: 1 at Chesterfield 16 Nov 1955 (T. Richards), 6 there 17–18 Nov 1958 (T. Richards), 1 at Great Bay sometime in Jan–Feb 1952 (NHFG Midwinter Waterfowl Inventory), 1 at Rye 2 Oct 1997 (S.R. Mirick), 6 at Greenland 28 Jan 2002 (D.J. Abbott) with 3 white morphs, 2 at Greenland 24 Feb 2008 (S.R. and J. Mirick), 1 at Star Island 29 Sep 2002 (M. Suomala *et al.*).

Ross's Goose *Chen rossii*

Status. Vagrant from the west. One at Durham 29–31 Mar 2008 (S. Young *et mult.*). At least 9 records for MA (BO database 2010), 20 accepted records for VT (C.C. Rimmer pers. comm.), and at least 3 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Brant *Branta bernicla*

Status. Regular spring and fall transient in small numbers along the coast, less frequent in the interior along the 2 major river valleys.

Early reports to 1950. The first state reports are those of Morton (1632) who wrote that “There are Geese of three sorts *vize* brant, which are pide,” and of Belknap (1792) who included it in his list, noting that it “is rare in New-Hampshire.” While its population has probably always been subject to wide fluctuations, it was presumably a common transient in colonial times and then greatly reduced due to hunting by 1860 as was the case in MA and ME (Griscom 1948). From then to 1900 it was uncom-

mon and Dearborn (1903) described it as a “somewhat irregular, but by no means rare visitor to Great Bay and the Piscataqua, both spring and fall.” After the public hunting seasons were curtailed in 1910, it began to increase slowly and was rather common by 1930 (Griscom 1948). However, the blight on Eelgrass *Zostera marina* in 1931 caused a collapse of the Brant population along the entire New England coast, reducing it to perhaps 10–15% of what it had been in 1930.

There only appear to be 2 certain early inland records though it doubtless occurred more often than this suggests. Maynard (1871) referred to it as “common” in migration in Coos County, but this is very unlikely since Brewster (1924) never recorded it at Lake Umbagog 1871–1909. Dearborn (1905) and Allen (1903) both mention 1 shot in late November about 1891 on the Winnepesaukee River between Franklin Falls and Tilton. Goodhue (1877a) records 1 shot near Tilton 27 Oct 1884.

There is only 1 known record from 1935 to 1947: 8 seen at Hampton 28 Nov 1937 (N.C. Nash IV). Both Eelgrass and the numbers of Brant recovered by 1945 in New England (Griscom 1948). Reported fairly regularly 1947–1950 (RNEB).

1950 to present. A modest increase in this period, numbers stable since 1990.

Spring. Extreme early spring migration date at the coast is 2 Mar 2007 (S.R. Mirick) and inland is 28 Mar 1999 at Haverhill (J. Williams), other than 3 possibly wintering near Star Island and found there 19 Feb 1967 (ASNH field trip). Peak spring migration period at the coast varies but is usually the last week of March through the first 2 weeks of April, though occasionally large flocks have come much later. Inland, the majority of spring records are from mid- to late May. Many birds apparently pass northward off the coast in spring, and flocks are most likely to be seen there under foggy conditions and/or after easterly storms. High spring coastal counts are 650 passing Rye 25 May 2011 (R.A. Quinn), 300 at Hampton 28 May 2005 (E.A. Masterson, I.C. MacLeod), 175 at White and Seavey Islands 17 May 2001 (D. Hayward *et al.*), and a flock of 600 over Portsmouth 20 May 1994 (P.D. Hunt).

Inland high counts are about 55 at Hinsdale 12 May 1957 (T. Richards), 60 at Dublin Lake 22 May 1947 (G. Clark), and late flocks of 500 at Rumney 23 May 1990 (E.A. Emery, P. Powers), and 200 at Lincoln 28 May 2005 (B. Griffith *et al.*). Latest known presumed migrants were noted at the coast at Hampton 18 Jun 1953 (T. Richards), at Star Island 28 Jun 1989 (T.H. Arter, L. Harper), 1 near Rye Ledges 25 Jun 2000 (S.R. Mirick), and 1 near White and Seavey Islands 29 Jun 1997 (A. Cook, D.L. De Luca *et al.*). Latest inland presumed migrants were at Second Connecticut Lake 15 Jun 1950 (F.T. Scott), and 1 at Cherry Pond, Jefferson 26 Jun 1999 (A. Delorey).

Summer. An occasional nonbreeding or possibly wounded bird may linger into summer as 1 at White and Seavey Islands 7 Jul 1999 (D. Hayward, D. Trested), 2 at Rye 16 Jul 1967 (H.C. Anderson), 2 at Seabrook Harbor 24 Jul 1993 which lingered at least until 12 Sep 1993 (A. and B. Delorey), 1 at Rye 18 Jul 1995 (R.A. Quinn, I.C. MacLeod), and 1 at Rye 18 Aug 1990 (R.A. Quinn, B. Wicklow).

Fall and winter. Early fall migrants are 1 at Rye 5 Sep 1969 (R.W. Smart), 3 inland at New Hampton 10 Sep 1988 (R. Rose, L. Emmons *et al.*), 1 at the coast 12 Sep 2010 (S.R. Mirick), and 2 at Newmarket 15 Sep 2001 (S.R. Mirick). Peak fall migration period varies widely but is usually the last week of October and the first 2 weeks of November both inland and at the coast. Latest fall records are 1 at Holderness 20–22 Nov 2000 (W. Taffe *et al.*), 29 at the coast 21 Dec 1969 (CBC), and highly unusual flocks of 50 inland at Pittsburg in the first week of Dec 1953 (F.T. Scott) and 100 at Monroe 27 Nov 1998 (P. Powers, E.A. Emery), the latter also the peak inland fall count known. Peak coastal fall counts are an exceptional 1580 at the coast 16 Oct 2003 (S.R. Mirick) and next highest is 398 off Hampton 7 Oct 2000 (S.R. Mirick *et al.*). Unusual winter counts are 15 inland at Bristol 22 Feb 1991 (G. Jeffers, H. Davis), 20 at the coast 12 Feb 1998 (M. Resch), 7 at Star Island 23 Feb 2002 (S.R. Mirick, D.J. Abbott *et al.*), and 9 at North Hampton 26 Feb 2004 (L. P., and M. Sunderland).

Barnacle Goose *Branta leucopsis*

Status. Vagrant, probably from the breeding population in Greenland. Four records. Three records probably of wild birds and 1 record of possible escapes. Two birds described as “quite skittish” associating with 2 Canada Geese on the Connecticut River at Northumberland 19 May 1990 (R. Irwin, D. and B. Killam) were probably wild birds. Six birds were found at Hopkinton 20 Apr 1991 (T. Richards, J. McIlwaine) which were believed to be the same 6 seen on Cape Cod, MA, the previous January. In turn, the Cape Cod birds were thought to be 1 of the 2 pairs that escaped on Grand Manan Island, New Brunswick, in 1990 and which were known to have raised 4 young in the wild. Other probable wild birds were 1 at Hinsdale 25–27 Mar 2007 (T. Wright *et mult.*), the same bird thought possibly to have spent the previous winter in Rhode Island, and 1 at Rye in a flock of Canada Geese 7 Oct 2007 (S.R. and J. Mirick). As shown by Sherony (2008), the Greenland population of this species has increased in the last 20 years and now regularly joins migrant Canada Geese returning to northeastern United States. Four accepted records for VT (C.C. Rimmer pers. comm.), at least 18 records for MA (BO database 2010), and at least 3 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Cackling Goose *Branta hutchinsii*

Status. Occasional visitor from the west; 14 reports. Three sight records of small geese seen before this species was split from Canada Goose in 2004 (AOU 2004) which belong here: 1 in a flock of full-sized birds at Berlin 15 Oct 1961 (R.W. Smart, A.R. Keith), 1 with a full-sized bird at Cherry Pond 26 Apr–30 May 1963 (H.C. McDade *et al.*), and 1 at Durham 6 Mar 2000 (S.R. Mirick; photo). Eight reports of birds in the years 2006–2009: 1 at Concord 7 Dec 2006 (R.A. Quinn), 2 at Hinsdale 25 Mar 2007 (T. Wright), 1 at Sandwich 22 Apr 2007 (A.J. Vazzano *et al.*), 1 with Canada Geese at Rollinsford 16 Nov 2007 (S.R. Mirick, B. Griffith), 4 at Hinsdale 30 Mar 2008 (L. Tanino *et al.*), 3 at Charlestown 6 Apr 2008 (H. Galbraith), 1 at Belmont 14 Dec 2008 (P.D. Hunt *et al.*), 1 at Hinsdale 15–20 Mar 2009 (H. Galbraith, E.A. Masterson), 1 at the Rochester wastewater treatment plant 12–22 Oct 2010 (J. Lambert *et al.*), 1 at Walpole 20 Mar 2011 (E.A. Masterson), and 2 at Charlestown 2 Apr 2011 (B. Griffith *et al.*). One record from VT (C.C. Rimmer pers. comm.), over 40 records for MA (BO database 2010), and at least 4 records for ME (ME-BRC website).

Canada Goose *Branta canadensis*

Status. Common to abundant spring and fall migrant, especially at favored localities. Common summer resident and breeder. Regular in winter in variable numbers at selected spots. Common to abundant in precolonial and colonial times, declining sharply in the 1700s and 1800s; increasing since about 1920, especially since about 1950.

Early reports to 1950. First noted for what is now New Hampshire by T. Morton (1632), who recorded “gray geese which are as bigg and bigger, then the tame Geese of England.” Also reported by Belknap (1792): “It is a bird of passage, and gregarious; the form of the phalanx, when on the wing, is that of a wedge.” Richards (1952a) points out that “(a)ccording to Forbush (1912) and Palmer (1949) the Canada Goose nested in MA and ME in colonial times, so very probably it also did in New Hampshire.” Other comments of early writers and Silver (1957) suggest that until about 1700 this species was a common to abundant migrant and that it probably wintered regularly in at least moderate numbers in the coastal region. Brewster (1924) records that it was an abundant migrant in spring and fall at Lake Umbagog until 1830 but that, if it ever had, it had ceased to nest there by that date. He records that its numbers there began to decline rapidly a few years later when the birds began to be hunted for the market, both for their flesh and for their feathers. Weeks (1888) confirms this pattern in Coos County. It seems highly likely that this pattern was also reflected elsewhere in the state in this era. By 1850, Canada Geese had begun to avoid Lake Umbagog and were only noted occasionally

when they flew over on migration, usually without stopping. The available reports suggest that they did the same in the rest of New Hampshire at this time, especially along the interior river valleys. From 1850 to 1900 the population seems to have declined steadily due to unrestricted hunting at virtually all seasons of the year. By 1900 it was still a regular migrant in modest numbers but was not known to breed or to winter in any numbers, even at Great Bay, the only locality at which it could still be expected on migration.

The population appears to have continued to decline from 1900 to about 1910 or 1920, but then began to recover as it received some protection from constant hunting. Richards (1952a) states: "Just when the Canada Goose first began to show a definite upswing in New Hampshire is not clear. Griscom (1948) lists the species as showing 'some increase' in New England in 1910–1930, and it is probable that this trend was reflected in New Hampshire. Many geese were observed staying at Great Bay in 1928 (Weeks, *ASNH Bulletin*), which seems to be the first definite modern winter record for the State. Evidently soon after that the Canada Goose became a regular winter resident there. In recent years the species seems to have become increasingly common as a migrant inland, appearing in large flocks overhead in spring and fall, but seldom stopping except in very small numbers." Richards (1952a) also found that the wintering population at Great Bay in 1949–1951 averaged between 250 and 500 birds and records that the highest known spring count was 2000 found twice in the first week of April. Breeding was still unknown, fall counts on Great Bay reached a high of 1300 in Dec 1950, and inland fall records had increased though the species was no commoner there at that season than in spring. Griscom (1948) noted that the numbers of fall migrants from the north had risen sharply, especially in 1947, and that a feral population in New England was just beginning.

1950 to present. Very great increase, especially since 1980. As noted by R. Andrews *in* Foss (1994), "The recently-established [New Hampshire] nesting population is the northern contingent of a semiwild population in adjacent MA. Before legislation outlawed commercial hunting, market hunters kept live decoys to lure flocks of wild migrants (Connert 1947). When live decoys were prohibited in the 1930s, some of the tame birds remained with other waterfowl on large estates. Offspring of those birds, augmented by geese which federal and state wildlife agencies stocked, gradually established small flocks. These readily adapted to artificial ponds and reservoirs... In such suburban locations, where hunting usually is prohibited and large predators are scarce, the flocks have grown and lost any urge to migrate. Thus distinct migrant and breeding populations...now occur in New Hampshire. Migrant birds still fly over the state in spring

and fall, and some winter on Great Bay...The resident population is similar in appearance but quite different in behavior."

Spring. The first migrants have been suspected as early as the last week of February, though this is hard to prove due to the presence of wintering birds. The peak of spring migration has usually been within a few days of March 31, not only since 1950 but also, on average, as recorded by Daniel Osborne of Dover in 1854–1866 (Earle 1963). Peak known spring count is now 7000 at Great Bay on 1–2 Apr 1967 (v.o.), and counts of 3000 or more there are nearly an annual event. High known inland spring counts are 1000 at Londonderry 16 Apr 1961 (H.A. Reynolds), 4000 at Hinsdale 27 Mar 2007 (E.A. Masterson) and 4500 there 17 Mar 2009 (P. Brown *et al.*), though counts over 500 are unusual. A much higher migration than usual passed north through the Connecticut River valley in 2007; a total of over 10,000 birds were recorded 18–31 Mar (v.o.). Migration tapers off from early April to very few by mid-May. Stragglers and even small flocks are occasionally noted as late as mid-June as they were by Richards (1952a). Thirteen were at Star Island 2 Jun 2000 (R.W. Suomala *et al.*), probable visitors from Appledore where they have nested regularly since the 1980s (Borrer and Holmes 1990). Fifty-five were at White and Seavey Islands 11 Jun 2002 (D. Hayward *et al.*).

Summer and breeding. A few nonbreeding birds were noted in July and August in 1950–1970 at various localities. The first modern documented breeding record was a pair with 1 young at World's End Pond, Salem, 13 Jun 1951 (T. and B.D. Richards); a local farmer reported that broods had been raised there for 3 successive years. In the summer of 1956 a flightless gosling was found at Enfield (R. Bryant), and in 1970–1972 other nesting pairs were found in the southern part of the state. Unknown as a breeder in the Squam Lake area through the 1970s, became regular there by the 1990s, and now is common and widespread (R.S. Ridgely pers. comm.). The Breeding Bird Atlas project 1981–1986 (Foss 1994) reports confirmed breeding at 12 localities and probable breeding in 12 localities in the 5 southernmost counties of the state out of 27 such records statewide. One hundred sixty geese from southern New England were released at Lake Umbagog in 1978–1983 and some have subsequently nested there. By 2000, the species was nesting at several localities north of the White Mountains all the way to Pittsburg. By 2009, it had become very common as a breeder (bordering on being a nuisance) in Merrimack County and possibly elsewhere (*fide* R.A. Quinn). Its breeding population was listed as increasing by Hunt (2009b). BBS data show it increasing rapidly in 1966–2009 and less so in 1999–2009 (Appendix IV).

Fall and winter. The earliest known fall migrants recorded were 30 at North Hampton 2 Sep 1960 (R.R.

Rathbone) and 20 at Great Bay 2 Sep 1966 (V.H. Hebert). Generally the first autumn arrivals are not noted until the last week of September or the first week of October. Peak migration period varies but is typically in the last 2 weeks of October and the first 2 weeks of November. This is the period when flocks are most frequently observed flying south along the 2 major interior river valleys. In recent years there has also been an increase in the numbers reported inland. In 1971, a heavy flight year, 1000 were found at Hillsborough 17 Oct (J. Pratt, E. Cjakowski), 2000 were in the Littleton–Monroe area (RB. Emery *et al.*), and 500 were found at 2 other localities all the same day. Two thousand were at Rochester 20 Oct 2009 (B. Crowley *et al.*), and 4186 were moving south along the coast 9 Oct 2010 (S.R. and J. Mirick). The mean date on which Daniel Osborne noted southbound flocks at Dover in 1857–1867 was 13 November (Earle 1963).

At favored localities such as Great Bay, passage birds often collect instead of passing directly through, accounting for maximum counts of 8000 from 4–14 Nov 1953 (B. Keenan, D.W. Finch *et al.*) and 6000 on 4 Dec 1960 (v.o.). Numbers there typically drop sharply between late November and early January, depending on the mildness of the season. The Coastal CBC has recorded numbers in the 2000–3500 range in mid-December; statewide CBC numbers grew sharply from 2200 in 1990 to 8000 in 2000, but then dropped to 5700 in 2009. Wintering numbers now range between 350 and 750, and counts over 1000 have been recorded several times in mid-January in the coastal region. The coastal winter waterbird survey has shown an increase from a mean of 1207 birds per year in 1952–1959 to 2643 in 2000–2009 (E.G. Robinson at NHFG pers. comm.).

Taxonomic note. The migrants that winter in New Hampshire are believed to be the North Atlantic race *B. c. canadensis* (R. Andrews *in* Foss 1994).

Mute Swan *Cygnus olor*

Status. Since 1963 a small number have been present in the coastal region throughout the year and are now breeding there. Though some may have been introduced, most reports are probably related to stray feral birds from farther south.

1950 to present. This Old World species was first introduced and naturalized in eastern North America on Long Island and the lower Hudson River valley 1910–1912. The first possibly wild-reared birds in New Hampshire appeared at Portsmouth 19 Sep 1963 (J.E. Cavanagh) and at Durham 14 Sep 1964 (Frick). The first known nesting in the state was in 1969 at Durham, 1 member of the pair having been present since Oct 1965 and having wintered in Portsmouth Harbor since 1967. Since 1965, reports of birds presumed to be feral have come, even occasionally

in winter, from the coastal region in Dover, Rye, Salem, Seabrook, Exeter, Nottingham, Hampton, and New Castle; from Boscawen, Alexandria, Milford, Derry, Nashua, Laconia, Barnstead, and from as far north as Hebron in the Merrimack River valley; and from Hinsdale to as far north as Monroe in the Connecticut River valley. Two at Laconia 5 Mar to 17 Apr 2005 (H.C. Anderson) might be the first colonists of the Lakes Region. Nesting at Hinsdale at least since 2007, 7 there 6 Mar 2008, and 20 there 29 May 2009 (all E.A. Masterson). Numbers found on the Coastal CBC increased steadily from the 1980s to 10 in 1990, 35 in 1993, and 57 in 1999. Peak counts date from the mid- to late 1990s and have dropped somewhat along the coast since. Since 2000 as many as 40–50 have wintered regularly at Great Bay and in Portsmouth. Its breeding population is listed as increasing by Hunt (2009b). To date no population control efforts have been made though they should probably be considered.

Trumpeter Swan *Cygnus buccinator*

Status. Extirpated. The case for the occurrence of this species in New Hampshire rests on reports of 2 very early writers. The first is Thomas Morton (1632): “And first of the Swanne, because she is the biggest of all the fowles of the Country. There are of them in the Merrimack River, and other parts of the Country, great Store at the seasons of the yeare.” From this quotation and other contextual references, Allen (1876) concluded that Morton was referring to Trumpeters.

The second and more convincing early writer was Belknap (1792): “The swan is the largest of the aquatic tribe which is seen in this country. One of them has been known to weigh 36 lb. and to be six feet in length from the bill to the feet, when stretched. Naturalists have different opinions respecting the music of the swan. The tame swan of England is said to be silent; and Dr. Goldsmith seems to think the accounts of the music of the wild swan fabulous...It is certain that our swan is heard to make a sound resembling that of a trumpet, both when in water and on the wing.” Both the description of the voice and the dimensions cited convinced Forbush (1925) that at least some of the swans reported by Belknap were Trumpeters. Referring to the weight and length mentioned, Forbush (1925) says: “These are the dimensions of a large heavy Trumpeter. The (Tundra) Swan never attained such a size.” Allen (1903, 1909) agreed with Forbush that this species was formerly a migrant in New Hampshire. As noted by Griscom (1948), it was “extirpated in early colonial times.” Considered hypothetical for ME (ME-BRC website). The species is now breeding in southern Ontario and has occurred in the Chesapeake area, so recolonization of New Hampshire is a possibility.

Tundra Swan *Cygnus columbianus*

Status. Occasional spring migrant in March or April and occasional fall migrant in October, November, and December. Probably regular in precolonial times, then greatly reduced. A significant increase in reports since 1960.

Early reports to 1950. As was the case in both ME and MA, this species probably occurred uncommonly but regularly in the precolonial and colonial periods after which it declined sharply due to hunting pressure and was extirpated (Griscom 1948). Some of the swans mentioned by Belknap (1792) probably belong here, though he did not distinguish more than 1 species. The first definite record for the state was an immature male shot at Seabrook 18 Oct 1878 and mounted by E. C. Greenwood of Ipswich, MA; its present whereabouts are unknown (Brewster 1879a, Brewer 1879, Stearns 1887, Allen 1903). Sometime in the following 25 years 1 was wounded and captured alive at Great Bay by H. Chapman (Dearborn 1903); it recovered and was kept alive for some time thereafter. One was taken at Great Bay 16 Dec 1902 (H. Caswell) and the specimen was given to what is now UNH (Dearborn 1903). A presumed family group of 7 was seen at Hinsdale 2–10 Dec 1937 (Shelley 1938a, BNEBL [14] : 1); this group was photographed by R. Stobie of NHFG and 1 was collected by L. R. Nelson and added to his personal collection. Another family group of 5 was found at Charlestown 16 Nov 1950 (Richards 1952a, 1972). This appears to be the entire record of the species in the state before 1960.

1950 to present. In 1960–1990 there were 11 records involving at least 28 birds in 11 of 31 different years. It appeared somewhat more often in 1991–2009, with 13 records totaling 30 birds in 10 of 19 different years. Of the total of 24 records, all but 3 were from the interior, mostly along the 2 major river valleys. Peak counts are 10 at Hanover 20 Nov 2011 (D. and S. Hardy), 8 at Great Bay 15 Nov 1998 (S.R. Mirick *et mult.*), and 8 at Chatham 9 Nov 2009 (R. Crowley), usual counts being 1–3 but occasionally in presumed family groups of 4–6. Usual occurrence in spring is March and April, earliest being 1 at Haverhill 2–19 Mar 1999 (R.J. Bradley *et al.*), 3 other times in March, 6 times in April and single reports at Squam Lake on 19 May 1975 (A. and V. Unsworth; Ridgely 1977), and the latest at Greenland 9 Jun 1969 (L.G. Phinney, J.E. Cavanagh).

Earliest fall report is of 3 at Dunbarton from about 10 Oct to 5 Nov 1961 (J.B. Grant *et al.*). It has been reported 7 times in November and 3 times in December, the latest of which was 6 at Hanover 23–27 Dec 1990 (S. Smith *et al.*). The only known winter record is 2 first found at Hinsdale 14 Feb 2009 (S. Regan).

Black-bellied Whistling-Duck *Dendrocygna autumnalis*

Status. Vagrant from the south. One record. A presumed family group of 5 birds appeared at a golf course in Salem 28 Jun 2011 (M. Campbell, G. Williams; photo). This species has a well-documented history of vagrancy to the north of its usual range in southern Texas and southern Arizona. Three records for MA including a family group of 9 in Jun 2008 and reports of 5 in both April and May 2011 (BO database 2011) which could have been the same flock seen in New Hampshire. One record for ME close to the New Hampshire border, also possibly of the same 5 birds, in Nov 2010 (S.R. Mirick pers. comm.)

Fulvous Whistling-Duck *Dendrocygna bicolor*

Status. Vagrant from the south and west with a history of vagrancy to areas north of its usual range. One record considered hypothetical for lack of 3 experienced observers, a specimen, or photograph. Eight birds, presumably the usual family group, appeared in a flock of domestic waterfowl, as they often do, at Farmington from 29 Jun to 1 Jul 2006 (V. Parshley). There are at least 17 records for MA, 6 of which occurred from June to August and 11 of which involved groups ranging from 4 to 11 birds at one time (Veit and Petersen 1993). Two accepted records for VT in August and October (C.C. Rimmer pers. comm.), and 2 records for ME (ME-BRC website, P.D. Vickery pers. comm.). The New Hampshire record has not been reviewed by the NHRBC.

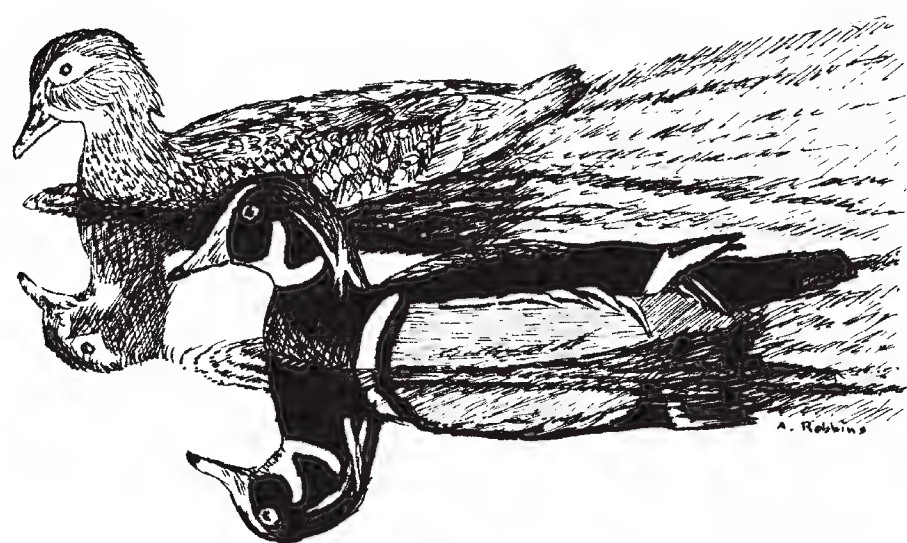
Wood Duck *Aix sponsa*

Status. Common spring and fall migrant, summer resident and breeder; occasional in winter. Common until the late 1800s, then declined sharply until the 1930s after which it recovered rapidly.

Early reports to 1950. First recorded for the state by Belknap (1792) when it was apparently common to abundant. Richards (1952a) states: “All authorities agree that (it) was once abundant in New England and suffered a very great decline in the latter part of the last century and the first decade or so of the present century. Phillips (1922–1926) describes the great decrease as beginning in the (1870s) for the northeast in general. Brewster (1924), on the other hand, says that Wood Ducks maintained themselves well at Umbagog until about 1900, but that in the next decade were ‘nearly all killed or driven away by the ever-increasing hordes of gunners.’” Goodhue (1877a) considered it commoner than the American Black Duck as a breeding summer resident at Webster, but in 1922 stated that it had been reduced there by 90% since 1880. Dearborn (1898) found it a regular migrant and “not rare” as a summer resident in Belknap and Merrimack Counties, but by 1903 he says that it “has greatly

diminished of late years, so that (it has) now become actually scarce” in the coastal region. Wright (1911) had only a single record for the Jefferson area 1899–1911: 2 seen at the Cherry Ponds 4 Oct 1910. Griscom (1948) agreed with Forbush (1912) that there was a slight increase 1910–1930 and pointed to a sharp increase after 1930. White (1924b) thought that the population had begun “coming back” near Concord, and later he (1937) stated that it had become much more common there from 1935 on. Richards (1952a) notes that the increase continued 1935–1950, especially in the northern part of the state where it had been rare until 1945. Richards found 75 adults and 125 young statewide in Jun 1949 and 40 in Coos County alone in Jul 1949 (BNEBL 5 [6 and 7]: 113–114).

1950 to present. The increase has continued but at a slower pace than in 1935–1950, but by the early 1970s the species had become the duck shot second most frequently by hunters (Lacaillade 1975). Now found rather commonly throughout most of the interior.



Spring. Earliest spring records for birds thought not to have wintered are 5 at Hinsdale 27 Feb 2009 (E.A. Masterson) and 2 at Kensington 2 Mar 2000 (G.W. Gavutis, Jr.). Mean spring arrival date 1952–2007 is 16 March. Peak spring migration period is the last week of March and the first 2 weeks of April, peak counts being 115 at Charlestown 29 Mar 1997 (P.D. Hunt, D. Crook) and 121 at Walpole 14 Apr 2007 (E.A. Masterson), spring counts of 40–50 or more having become fairly regular. Migration is thought to be over by the second week of May, extreme late migrants being indistinguishable from summering birds.

Summer and breeding. For the first time since 1900, Richards (1951c) could say that it breeds statewide with the exception of coastal salt marshes and high elevation mountain ponds. Lee (1954b) reported 93 known broods in 1952 and 133 in 1953. Foss (1994) reports nest sites confirmed in 58 atlas blocks and probable nest sites in 18 other blocks in the *Atlas of Breeding Birds* project 1981–1986. The great majority of these sites were south of the

White Mountains, only 9 confirmed sites being north of the mountains. Nevers (1968) stated that the great increase in the number of Beaver *Castor canadensis* empondments since 1900 had created much new breeding habitat and migration gathering sites used in September and October. Richards (1952a) reported that the mean number of young in 111 complete broods of all ages found in 1949–1951 was 7.6. He also (1972) has recorded 2 instances of hen Wood Ducks with mixed Wood Duck/Hooded Merganser broods: “The first, seen in Penacook, on June 16, 1949, included 15 baby Wood Ducks and 3 baby mergansers, all estimated to be about three weeks old. The second was seen (in)...Swanzey, June 23, 1965, and included seven young Wood Ducks and two young Hooded Mergansers, all perhaps four weeks old...Presumably in each case a female Hooded Merganser, after laying a few eggs, got chased away from the hole by a female Wood Duck, which started to incubate only after laying a full clutch herself, all the eggs somehow hatching at once.” Based on a survey of 75 plots, mean number of breeding pairs statewide was estimated at 14,830 in 1989–1993 and 9334 in 2006–2010 (E.G. Robinson at NHFG pers. comm.). One at Star Island 15 Aug 2000 (R.W. and M. Suomala), the only known report for the New Hampshire Isles of Shoals. Summer concentrations of up to about 30+ adult drakes are noted infrequently in June and July at favored locations such as Pondicherry refuge. Breeding population now listed as increasing by Hunt (2009b). BBS data show a modest increase 1966–2009 and 1999–2009 (Appendix IV).

Fall and winter. Postbreeding flocks frequently begin to collect by the first and second week of August, as 26 at Hinsdale 1 Aug 2009 (L. Tanino), 23 at Hopkinton 11 Aug 1964 (M.N. Dodge *et al.*), and 81 at Springfield 20 Aug 1994 (P.D. Hunt). Peak fall migration period is typically the last 2 weeks of September and the first week of October. Peak fall count is 280 at Londonderry 22 Sep 1964 (H.A. Reynolds), counts over 100 being rare. Estimated total harvest by hunters statewide in 1970–1975 was 6233 dropping to 4833 in 2004–2009 (E.G. Robinson at NHFG pers. comm.). Nearly all birds have left by mid-November except occasional lingerers into December and early January, very rarely to February since 1995, usually only in mild seasons. The first known midwinter record was 1 at Bow 23 Jan 1949 (G.P. Baker); since then there have been a few records of single birds in late January and in February, and a few have wintered successfully. Examples are 1 at Concord through the 1951–1952 winter, probably the same male at Laconia for each of the 4 winters from 1968–1969 (F. Hnida) through 1971–1972 (W.S. Lord *et al.*), 1 at Hinsdale 6 Dec 2006 to 12 Feb 2007 (E.A. Masterson), and 1 that wintered at Portsmouth 1999–2000. One was as far north as North Conway 20 Dec 1992 (CBC).

Gadwall *Anas strepera*

Status. Rare to irregular spring and fall transient, occurring more frequently in recent years. Formerly only a rare straggler from the west.

Early reports to 1950. Dearborn (1903) provides the first known state records and cites S. A. Shaw as authority that “only a very few have been killed at Hampton” in fall since about 1880 and that “Mr. George Wentworth has in his collection...a pair of spring birds...taken in Little Bay,” the date not provided. Allen (1903,1909) had only the same records. White (1924b) knew of only 1 shot in the fall near Penacook “some years ago” and identified by L. J. Rundlett; he had no additional records by 1937. Richards (1952a) mentions that “In recent decades the continental status of the Gadwall has changed considerably...While overall numbers may have decreased, Griscom (1948) points to a gradual increase in the northeast starting in the decade 1930–1940 and the establishment of a breeding colony on Long Island. While this increase may account for the few scattered records for New Hampshire...since 1939, there is no real evidence of an increase occurring.” Richards (1952a) lists 4 records of 11 birds in the 1939–1946 period: 1 at Hanover 12 Apr 1939 (R.L. Weaver); a flock of 6 at Enfield Center 19 Sep 1941 (R.L. Weaver); 1 at the same place 27 Sep and 1 Oct 1941 (L. Forsyth) that could have come from the flock of 6; and 4 at New Hampton 25 Jul–25 Aug 1946 (V.H. Hebert).

1950 to present. Rare in the 1970s and 1980s but a significant increase starting about 1990. Now can be considered a regular spring and fall transient in small numbers, found about as often in spring as in fall.

Spring and summer. Extreme dates are 2 at Hinsdale 8 Mar 2009 (E.A. Masterson) to 1 at Errol 1 Jun 1999 (R.A. Quinn), though most birds are found from mid-March through April. Peak spring count is 13 at Hinsdale 9 Apr 2003 (D.J. Abbott). Seventeen birds reported from 8 localities in spring 2009 (v.o.). The only known record for the New Hampshire Isles of Shoals is 2 at Star Island 2 May 1976 (R.S. Aaronian), and possibly the same pair bred on Appledore Island, ME, that year (Borrer and Holmes 1990). A possible nonbreeding straggler was 1 at Rye 17 Jun 1998 (D.J. Abbott *et al.*), and the only known midsummer record is 3 found at Jackson 28 Jul 1957 (J. Warren *et al.*).

Fall and winter. Extreme dates are 1 at Rochester 17 Aug 2009 (D. Hubbard) to 3 at Newington 28 Jan 2006 (E.A. Masterson *et al.*), though most birds are found in October to early November. Peak fall counts are 12 at Greenland on Great Bay 19 Nov 1975 (E.W. Phinney *et al.*) and 13 there 18 Dec 2004 (S.R. Mirick *et al.*). None had ever been found after December until 2006 when 5 were at the coast 2 Jan (E.A. Masterson, D.B. Donsker *et al.*), and 2 were at Nashua 21 Jan (R. Andrews). The only other post-

December reports are 1 at Hampton 2 Jan 2009 (S.R. and J. Mirick), 1 at Durham 10 Jan 1994 (A. Tappan), 1 at Newington 27 Jan 2006, and 2 at Portsmouth 27 Jan 2007 (both T. Bronson *et al.*).

This species has become increasingly common along the entire upper Atlantic coast since 1960 and was found breeding in 1969 at the Parker River National Wildlife Refuge just a few miles south of the New Hampshire border.

Eurasian Wigeon *Anas penelope*

Status. Uncommon but regular visitor to Great Bay in the coastal region. Only 2 inland reports. Reported with increased frequency since 1990.

Early reports to 1950. A female was collected in New Hampshire at Errol Hill Pond (now known as “Mountain Pond”) near Lake Umbagog 12 Oct 1890 by Brewster (1924), now MCZ specimen #230349. One was taken at Seabrook a day or 2 before 17 Nov 1908 when it was received to be mounted (Hardy 1909). Hasbrouck (1944a) reports a remarkable “flock of twenty or thirty (that) had been feeding in Great Bay for several days” prior to 1 being collected 14 November of an unspecified year but presumably near the time of writing; the specimen can no longer be found. While such a report sounds suspect today, it should be recalled that the largest flock ever recorded in New England was 43 at Martha’s Vineyard 11 Nov 1940, lending some credence to Hasbrouck’s report.

1950 to present. At least 30 records of at least 45 birds reported in every year 1994–2009 in numbers from single birds to a flock of 5, exact numbers difficult to determine due to overlapping reports and fluctuating numbers of birds at the same locations. Regular fall arrival, especially at Great Bay, earliest known being 1 there 24 Sep to 24 Nov 1995 (A. Delorey *et al.*). At least 6 records of birds arriving for the first time in October and 7 such records for November; 3 first-time arrivals in December, 2 in January, 1 in February, and 3 each in March and April. Latest known in spring is 1 at Greenland 16 Apr 2006 (S.R. and J. Mirick). Most records are of single birds with counts of 2–4 occasionally; high count is 5 at Great Bay 14–27 Nov 1998 (A. Delorey, S.R. Mirick *et al.*). There have been 7 cases where the same individual bird is believed to have remained at the same location for 2 months or more; the 2 longest periods were 1 at Great Bay 23 Oct 1997 to 4 Apr 1998 (S.R. Mirick, A.J. Vazzano *et al.*) and 1 at Greenland on Great Bay 24 Oct 2007 to 5 Apr 2008 (S.R. Mirick *et mult.*). The first inland record since 1890 was 1 at Colebrook 4 Apr 2000 (D. and B. Killam), the next being 1 at Walpole 7 Apr 2001 (E.A. Masterson, F. Von Mertens *et al.*). One was shot at Great Bay in 1952 (Kent), was mounted, and in 1978 was found on display at the Anchorage, Alaska, airline terminal by D. W. Finch!

American Wigeon *Anas americana*

Status. Regular spring and fall migrant, more frequent in fall but not common at either season; a few birds occasionally winter; rare in June and only found twice in July. Formerly rather rare but has increased significantly since 1950.

Early reports to 1950. The first New England record is by Morton (1632) and the first for New Hampshire by Belknap (1812), who listed it as the “Gray Duck, *Anas penelope*” when it was probably moderately common. Forbush (1912) suggests that it was more common in the early 1800s than later, and Dearborn (1903) confirms this decline by noting that “it used to be fairly common (in) spring and fall on Great Bay” but that by 1900 it was very rare and the redoubtable local collector S. A. Shaw had only been able to get 1 in the previous 20 years. Allen (1903) knew it only as an “uncommon spring and fall migrant on the coast.” Griscom (1948) notes that the termination of spring waterfowl shooting in 1916 was followed by a significant increase into the 1940s, especially in freshwater coastal ponds.

The first inland record was made by Brewster (1924) at Lake Umbagog where he found a total of at least 16 from 2–10 Oct 1888. His only other record there in the entire 1871–1909 period was a flock of 8 he felt “nearly sure” were this species 21 Sep 1897. The next known report was also inland, 1 seen at Cherry Pond 19 and 23 Sep 1911 by Wright (1911); and the first known spring record was 4 at Westmoreland 2 May 1931 seen by L.O. Shelley (1931b). The next reports are those of Richards (1952a): a drake at New Hampton 11 Aug 1944 (V.H. Hebert), 2–4 at Tamworth 8–15 Nov 1948 (T. Richards), and 4 at Great Bay 4 Dec 1948 (T. Richards). Suddenly in 1949 there were 12 reports of 33 birds, and the species has been recorded every year since.

1950 to present. Increase; regular in the interior though less numerous inland than at the coast; rarely reported north of the White Mountains.

Spring and summer. Since birds often disappear from their wintering localities by late February, extreme early March dates for possible migrants are suspect. The earliest probable spring migrants were 6 inland at Monroe 4 Mar 2008 (R.J. Bradley). Peak spring migration period is the last week of March and the first 2 weeks of April, the number of reports from the interior often exceeding the number from the coast and concentrated along the 2 major river valleys, though the number of individual birds recorded at the coast is usually larger. Peak spring counts are 46 at Greenland on Great Bay 30 Mar 2006 (S.R. Mirick) and 47 at Great Bay 8 Apr 1995 (A. Delorey); latest spring records are a pair at Littleton 23 May 1980 (P.A. Phipps, E.A. Emery) and 1 at Exeter 10 Jun 2009 (L. Medlock). A total of 4 at 2 localities in Rye 24 Jul 1993 (A. and B. Delorey *et al.*), a pair at Errol 7 Jun

2002 (R.A. Quinn *et al.*), 1 at Newmarket 15 Jun 2008 (A. and G. Robbins), and 1 at Newington 7 Jul 2006 (G.W. Gavutis, Jr.) were exceptional stragglers.

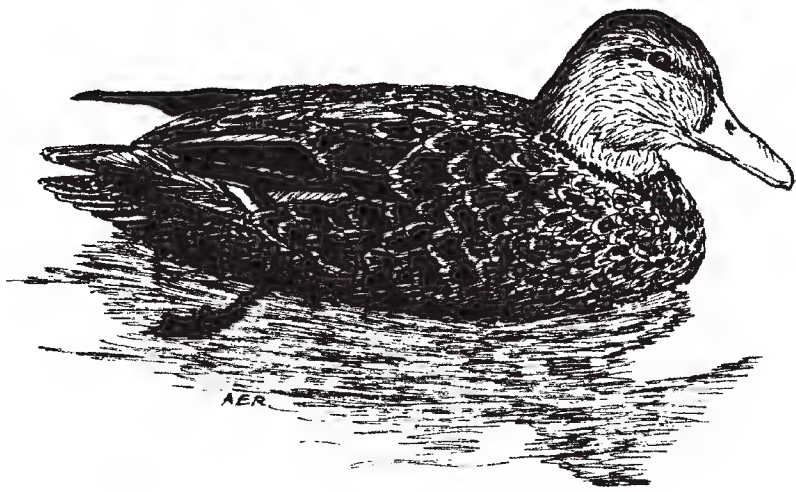
Fall. Extreme early fall arrival is 1 at Rochester 9 Aug 2010 (S.R. Mirick; photo). One appeared at Exeter 12 Aug 1968 (R.W. Smart), and the next earliest record is 1 at Exeter 23 Aug 1997 (A. Delorey). General fall arrival is often by the end of September such as 30 at Pittsburg 25 Sep 1959 (A. Scott) and 21 at Spofford Lake 8 Oct 1960 (T. Richards). Peak migration period is typically the last 2 weeks of October and the first week of November, birds being noted inland slightly before numbers are present on the coast. Flocks often gather at favored coastal locations in mid- to late November, providing peak counts of 300+ at Great Bay 24 Oct to 14 Nov 1998 (S.R. Mirick, A. Delorey *et al.*) and 325 there 11 Nov 1965 (E.W. Phinney). Such numbers are unusual, may reflect flight years, and most records over 75 date since 1990. In mild seasons numbers occasionally linger at the coast into December, as 110 at Greenland 4 Dec 1997 (S.R. Mirick) and 65 on 27 Dec 1959 (CBC) though usually only stragglers and occasional winterers are left so late.

Winter. There were no January or February records in 1950–1960 and only 7 such records 1961–1980. Since 1980 it has been reported occasionally and more regularly in small numbers, especially in mild seasons. The first known successful wintering was 1 at Holderness 1966–1967 (R.W. Smart *et al.*). Possibly the same individual returned there in 1967–1968 and 1969–1970, and possibly the same bird wintered at Laconia in the 1968–1969 (with a second bird) and 1971–1972 seasons. January and February numbers usually range 1–6 but peak counts on Great Bay are 16 at Newington 18 Jan 1995 (M. Suomala), 20 at Durham 18 Jan 1997 (A. and B. Delorey), 27 at Greenland 28 Feb 1998 (A. and B. Delorey), 33 at Greenland 18 Feb 1999 (S.R. Mirick), and 61 at Greenland 8 Jan 2000 (S.R. Mirick, A. and B. Delorey).

American Black Duck *Anas rubripes*

Status. Common spring and fall transient and regular breeder, and there is evidence of a significant recent decline in some areas. A few always winter, principally near the coast and at a few favored inland localities.

Early reports to 1950. First reported for New Hampshire by Belknap (1812) as the “Ash colour Duck, *Anas cinerea*.” It presumably bred widely throughout the state in both the precolonial and colonial periods but appears to have become greatly reduced by 1800 except in remote areas due to constant hunting. Brewster (1924) noted that at Lake Umbagog it had formerly been an abundant breeder and migrant but that by 1909 it was nearly extirpated as a breeder though still common as a fall migrant. Allen (1903) lists it as a “common spring and fall migrant and



in the southern part of the state a rare summer resident.” Dearborn (1898) described it as “abundant during the spring and fall, occasionally remain(ing) through the summer to breed...They are usually more plentiful in spring than in autumn” in Belknap and Merrimack Counties. Dearborn (1903) wrote that it was an abundant transient at Great Bay in spring and fall and a winter resident at the coast. As pointed out by Richards (1952a), it was not known to winter inland at this time. White (1937) describes a general decrease in the Concord area in the past and then some increase from 1930–1935.

Richards (1952a) summarizes elegantly as follows: “Griscom (1948) describes a slight decrease of the Black Duck in the period 1865–1910, a slight increase 1910–1930 and a slight decrease again after 1940. Palmer (1949) also shows fairly clear fluctuations of the species over the years in Maine that very likely were reflected in New Hampshire. There seems to have been a definite increase starting about 1900, which reached a peak about 1930, with more birds occurring as summer residents as well as in the fall and winter. Since then a sharp decline, followed by more ups and downs, has apparently taken place. While possibly more apparent than real for the population as a whole, it is more likely that real and marked fluctuations due to the varied effects of hunting, breeding success and severity of winters have occurred in the distant past as well as in the recent past. In any case, the Black Duck has in recent decades reestablished itself as a common summer resident throughout New Hampshire including the coastal marshes, from which it was apparently absent 50 years ago except during migration and winter. In winter it has also begun to occur in the interior.” The first recorded inland wintering birds were in New Hampton when 30 stayed through Feb 1945 (V.H. Hebert), and wintering in the interior has been recorded nearly every year since. High count known in fall was 1500 at Great Bay 23 Nov 1947 (T. Richards), and 1250 were found at Great Bay 9 Jan 1949 (T. Richards).

1950 to present. A decline in the number of both transient and breeding birds is thought to have begun in the

mid-1950s and continued at least through the 1990s, mirroring a decline in the entire New England region estimated at about 60% (USFWS data *in* Foss 1994). Lacaillade (1975) nonetheless considered it very common and widespread in spring and fall and abundant in winter, noting that about 45% of birds killed in 1949–1972 were this species and that about 10,000 were being shot per year about 1970–1974. Suggested causes for the 1950s–1990 decline include excessive hunting, habitat loss, hybridization with and competition from Mallards, and acid rain (Grandy 1983). Its breeding population is now listed as decreasing by Hunt (2012).

Spring. Presence of wintering birds obscures the precise onset of spring migration, but the first migrants are often suspected by the last week of February or the first week of March, usually at the coast, but 90 at Hinsdale 7 Mar 2004 and 100 there 9 Mar 2007 (both E.A. Masterson) probably included migrants. Peak of spring migration is usually the last week of March and the first week of April, the high spring coastal count being 1500 at Great Bay 10 Apr 1966 (L.G. and E.W. Phinney). Spring migration is thought to be over by mid-May; later migrants are indistinguishable from summering birds. Peak inland spring count is 750 at Concord 11 Apr 1970 (R.W. Smart, E.W. Phinney). No counts remotely close to these peaks have been reported since.

Summer and breeding. It was breeding statewide by 1950 (Richards 1951c). It has been found nesting from sea level to 3000 feet elevation at Nancy Pond, White Mountains, 5 Jul 1992 (T. Richards). While it may have nested there before, the first known breeding record for the New Hampshire Isles of Shoals was noted 7 Jun 1972 at Star Island (A.C. Borrer). Richards (1952a) states: “The average size of 90 complete broods of all ages recorded in the period 1949–1951 was 6.5 young...(O)ne brood, which was almost fully grown...consisted of 15 birds not including the mother, possibly the largest number ever reported.” Foss (1994) reports confirmed breeding in 79 atlas blocks and probable breeding in another 31 blocks, scattered fairly uniformly over the state 1981–1986. As noted by Nevers (1968), the increase in the number of Beaver ponds statewide from 1900 to 1968 has provided increased nesting habitat and migratory stopover sites in May and September. Considered the commonest breeding species of duck in the state (Lacaillade 1975) but the breeding population began a general decline since the 1950s. The number of breeding pairs at 75 plots averaged 6480 in 1989–1993 but fell to a mean of 1751 pairs in 2006–2010 (E.G. Robinson at NHFG pers. comm.). The recent great increase in the Canada Goose and Mallard breeding populations may be related to a sharp decline in American Black Duck breeding numbers reported, especially inland (*fide* R.A. Quinn, R.S. Ridgely). It is now only the 4th most common breeding waterfowl species

in the state (WAP 2005). BBS data show a significant decline averaging over 5% per year in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. Flocks of postbreeding birds begin to gather by the first week of August, such as 63 at Lake Umbagog 5 Aug 2001 (C.J. Martin *et al.*). The first presumed migrants are often noted by the first week of September. Peak of fall migration is typically in the last 2 weeks of October, numbers routinely building up to 1500 or more at favored localities such as Great Bay. Richards (1952a) presents data which suggest that 2 periods of peak numbers occur, 1 representing an earlier gathering of local birds and 1 representing the later flight of migrants from the north. Peak known fall count is 3500 at Great Bay 28 Oct 1962 (S.H. Smith *et al.*) and also 14 Nov 1965 (R.W. Smart). Richards (1952a) notes that “inland in the fall Black Ducks occur in somewhat larger flocks than in spring, and there appear to be fairly well defined early and late flights,” though absolute inland numbers do not approach those found at the coast. A high inland count is 400 at Spofford Lake, Chesterfield, 21 Nov 1962 (T. Richards). Estimated statewide harvest by hunters averaged 10,083 in 1970–1975 but has fallen to 1833 in 2004–2009 (E.G. Robinson at NHFG pers. comm.). Away from Great Bay, mean harvest statewide in 8 years 2000–2009 was only 55 (*fide* R.A. Quinn). Coastal CBCs averaged 479 for the decade of the 1950s, 996 in the 1960s, 765 in the 1970s, 987 in the 1980s, 1397 in the 1990s, and 1275 in the 2000s.

Winter. In mild seasons numbers often remain high into early January, both inland and along the coast. Richards (1952a) has suggested that wintering numbers tend to remain rather stable until the beginning of spring migration near the coast. Inland wintering numbers are much smaller and often dependent upon handouts, but birds are regularly present at such localities as Laconia, New Hampton, Monroe, and Haverhill. Even in the most severe winters, a few birds take refuge in the sea if all inland bodies of fresh or brackish water freeze. Statewide CBC totals remained fairly steady at about 1700 from 1990 to 2009. In the 1990s, overwintering numbers of this species in New Hampshire have ranged from a few hundred to 3000–4000, of which 80% are thought to be adults (USFWS data *in* Foss 1994). Klimstra and Padding (2010) reported that on the midwinter survey of the coastal marshes, the mean number found per year 1955–1971 was 1900 but the 1996–2010 mean was only 984. However, winter Black Duck populations were considered stable 1985–2005, 4.3% of American Black Ducks shot 1999–2002 showed evidence of some hybridization with Mallards, and this species outnumbered Mallards 2.2 to 1 in coastal areas in winter (WAP 2005). A most unusual report of 1 at Jeffreys Ledge about 25 miles at sea 9 Feb 2002 (D.J. Abbott, D.W. Finch *et mult.*).

Taxonomic note. See Appendix I for reports of hybrids of this species with Mallards.

Mallard *Anas platyrhynchos*

Status. Regular spring and fall migrant, often in numbers, regularly wintering and breeding. Great increase since 1900 and a further increase since 1950.

Early reports to 1950. This species' absence from Belknap's (1792) list is significant because it almost certainly did not occur then, being at that time primarily a species of prairie potholes and sloughs in the midsection of the country. By 1875 the Mallard began to appear infrequently in the northeast in fall, being even scarcer in spring. In 1871–1909 at Lake Umbagog, Brewster (1924) had only 1 spring record but found small numbers nearly every fall, including a flock of 20 in Oct 1906. He never suspected it of breeding or found it there in summer. Dearborn (1898) considered it a rare visitor to Belknap and Merrimack Counties, having only 3 records from 1883–1895. But 5 years later, Dearborn (1903) called it “of irregular but not rare occurrence” at Great Bay in fall. Allen (1903) had only a single spring record, 1 shot at Lancaster in 1888 or 1889 (*fide* F.B. Spaulding), but reported a modest flight into southern New England in 1900 when at least 8 were at Hampton 8–11 Nov (W.E. Cram) and about 10 were near Chocorua 9 Nov (H.C. Sargent). Wright (1911) reports an unusual flock of 75 on the Connecticut River 3 Nov 1906 (F.B. Spaulding). Phillips (1922–1926) reports that numbers of this species began to increase in 1913, and a pair wintered on the Connecticut River in the 1918–1919 season (Smith 1921). Forbush (1925) noted that it was formerly a rare migrant in New England but that it had become uncommon to rare there at all seasons by 1925. True wild birds were considered rare in the Concord area by White (1937), but he noted that there were many introduced birds breeding there and wandering some distance outside the town. This pattern continued as more Mallards were introduced as ornamental species in parks and at private lakes, not only in New Hampshire but also widely in the Atlantic Flyway (Silver 1957). Provost (1942) considered it an “uncommon migrant” in spring and fall.

There were no reports of this species in RNEB 1935–1946 but it was reported regularly from then to 1955. Griscom (1949a) described it as “now more common on the Atlantic Coast than ever before.”

1950 to present. It has become a regular and common spring and fall migrant in this period, perhaps for the first time. Richards (1952a) considered it a rare spring migrant and uncommon fall migrant in New Hampshire. Since then it has also become much more common, has begun to breed, and numbers now winter regularly. La-caillade (1975) documents a steady increase in the num-

ber shot from 1950–1973, especially in 1963–1973. The number of true wild birds has increased further, but so has the number of introduced birds that have become feral, especially in several other Atlantic flyway states, making extreme migration dates and the breeding of wild birds virtually indistinguishable.

Spring. Onset of spring migration appears to be in very late February or early March when the first birds appear at places where few or none have wintered: 1300 at the Exeter water treatment plant 6 Mar 2011 (L. Medlock) and 294 at Hinsdale 23 Feb 2008 (E.A. Masterson). Migration usually peaks in the first 2 weeks of April, and it is thought to be over by late May. Peak spring counts of passage birds are 800 at Charlestown in the Connecticut River valley 1 Apr 2008 (T. Bronson), 282 there 12 Apr 2008 (E.A. Masterson), 200 at Hinsdale 9 Mar 2007 (E.A. Masterson), and 150 at Gilford in the Merrimack River drainage 13 Mar 2004 (H.C. Anderson), though usual high counts are in the 75+ range. One hundred seventy-five were at the Exeter wastewater treatment plant 14 Jun 2005 (T. Bronson) and 41 far north at Pittsburg 28 Jun 1997 (E.B. Nielsen, S. Sweet).

Summer and breeding. Full-winged introduced birds are found in much of the southern and coastal regions of the state. The first recorded nesting of what is believed to have been a wild pair was at Errol 9 Jul 1952 (J.A. Lee, P. Brezovsky). A second pair believed wild was found with young at Bradford in Jul 1954 (J.A. Lee). The breeding bird atlas (Foss 1994) records confirmed breeding in 74 blocks and probable breeding in 26 others in 1981–1986, more heavily distributed south of the White Mountains but also in the north. Based on surveys at 75 plots around the state, mean number of breeding pairs were estimated to be 17,596 in 1989–1993 and 16,099 pairs in 2006–2010 (E.G. Robinson at NHFG pers. comm.) Its breeding population is listed as increasing by Hunt (2009b). BBS data show a moderate increase both in 1966–2009 and 1999–2009 (Appendix IV).

Fall and winter. Birds considered wild are commonest in the state in fall. Suspected migrants begin to appear by late August in places where the species was absent in summer. Peak migration period appears to be the last 2 weeks of October and the first week of November. Peak counts of birds thought possibly to be migrants have begun to be regularly in the 200–400 range in 2005–2009 with a peak of 550 at Exeter wastewater treatment plant 25 Aug 2006 (T. Bronson). The estimated statewide harvest by hunters in 1970–1975 was 3267 and by 2004–2009 had risen to 6517; the number of hunters has fallen since 1970 (E.G. Robinson at NHFG pers. comm.).

As year-end approaches, lingering birds mix with tame flocks at favored localities, sometimes producing very high counts such as 1000 at Windham 11 Dec 2002 (M.G. Harvey) and 882 at Laconia 31 Dec 1978 (CBC). At such

places and in tidal areas that do not freeze, a few always winter. In recent winters, the number wintering at inland localities has risen: 400 at Rochester 7 Jan 2008 (D. Hubbard) and numbers in the 1200–1700 range at the Exeter water treatment plant in January and February 2009–2011 (S.R. Mirick). High CBC totals for Nashua were 1576 in 2001 and 1850 in 1994. Statewide CBC totals rose from 2800 in 1990 to 7000 in 1999 but then fell to 5200 in 2009. The first known winter record for Star Island was 1 there 23 Dec 1974 (L.G. Phinney *et al.*). At inland freshwater locations in winter, Mallards outnumber American Black Ducks 9.7 to 1 (WAP 2005). Klimstra and Padding (2010) reported that on the midwinter waterfowl survey of the coastal marshes the mean number found per year 1955–1971 was only 6.5 but had risen to 526 for 2006–2009; the peak count was 1077 in 1996.

Taxonomic note. See Appendix I for reports and discussion of hybrids between this species and American Black Duck and with Northern Pintail.

Blue-winged Teal *Anas discors*

Status. Uncommon spring and fall migrant; very local summer resident and breeder; unknown in winter. Abundance has fluctuated widely in the historical period with a significant increase since 1950 followed by a decline since 1990.

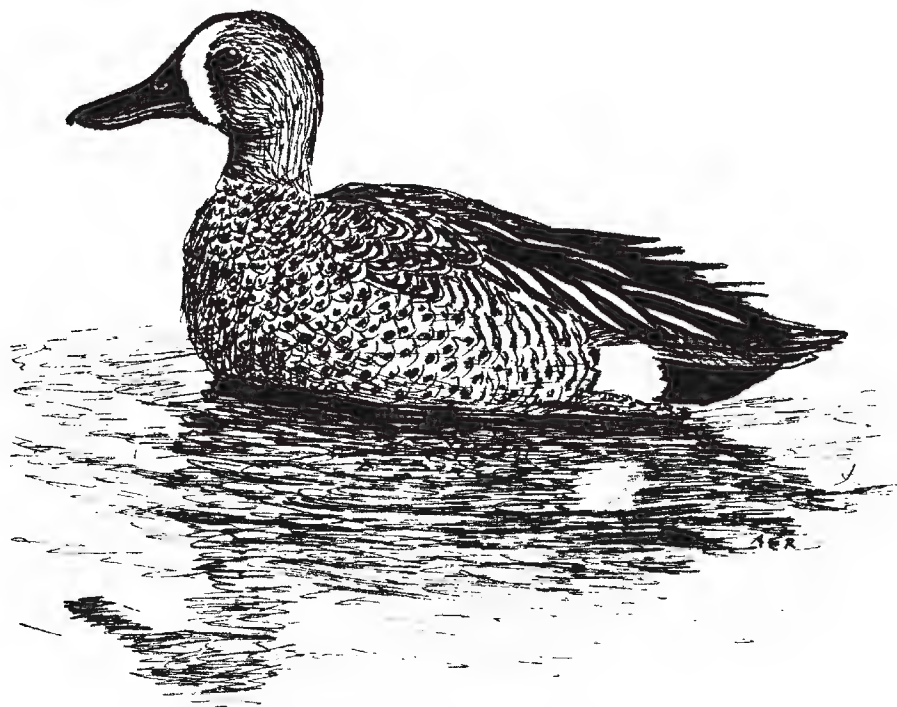
Early reports to 1950. First listed for New Hampshire by Morton (1632) and Belknap (1792). Forbush (1912) and Phillips (1926b) agree that it was abundant in New England in 1880 but that the population declined about 90% in the following 20 years. Brewster (1924) records that at Lake Umbagog he never found it in spring, it did not breed, and that it declined from abundance to great scarcity in the 1871–1900 period. He recorded 62 on 14 Sep 1880 but only saw 1 the entire fall of 1900. Dearborn (1898, 1903) had no records at all for Belknap or Merrimack Counties and considered it very rare in the coastal region. Allen (1903) considered it uncommon in spring and fall except in the White Mountain region where it was rare. The beginnings of a recovery are suggested by Wright (1911) who called it “not uncommon” in fall though unknown in spring in the Jefferson region. White (1924b) considered it “scarce” after having been “formerly a fairly common migrant” in the Concord area in spring; by 1937 its status had not improved.

Griscom (1949a) shows that for the northeast generally, this species’ numbers were very low in 1880–1935 during which period it was rare in fall and very rare in spring. He (1949a) documents a tremendous increase 1935–1940, a sharp drop 1940–1945, and another sharp increase 1946–1948. Richards (1952a) notes that all these fluctuations are “not clearly reflected” by the available records for New Hampshire though they may have oc-

curred there. Richards (1952a) says that there is evidence of a decline from 1941 until the mid-1940s and a subsequent recovery by 1950 which is supported by the number of reports in BNEBL.

1950 to present. Slow increase to 1965, sharp increase in reports 1965–1970, but a modest decline 1990 to date. Lacaillade (1975) reports an increase in the number shot by hunters 1950–1973, especially in 1963–1973.

Spring. Earliest known spring migrant is a male at New Hampton 7 Mar 1963 (R.C. Hebert), the second earliest being 11 Mar 1977 (E.W. Phinney) at North Hampton.



Mean spring arrival date 1952–2009 is 25 March and peak spring migration period is the middle 2 weeks of April. Peak spring count at the coast is 25 on 9 Apr 1961 (*fide* V.H. Hebert) and inland is 30 at Haverhill 14 Apr 1979 (T. Levin); far higher numbers than any recorded since 1985. The latest migrants are suspected in the second week of May but cannot be certainly distinguished from the very few summering birds. A probable non-breeding lingerer was at Hampton 3 Jun 2007 (S.R. and J. Mirick).

Summer and breeding. First documented breeding in the state was a female with 4 young at Westmoreland 24 Jul 1932 by L. O. Shelley (1933b), who had suspected nesting in Cheshire County for several prior years. Richards (1952a) investigated the locality in 1951 and found it “no longer favorable waterfowl habitat,” so some doubt should probably be attached to Shelley’s record. However, by 1950 this duck was established as a local breeder south of the White Mountains and a very scarce, local, and irregular breeder farther north. The *Atlas of Breeding Birds* project 1981–1986 (Foss 1994) records only 4 confirmed breeding sites, 2 probable and 3 possible in 1981–1986, all but 1 of which were south of the White Mountains; fledged young were recorded from 1 July to 18 August. A female with 6 young was at the Rochester wastewater treatment plant 26 Jul to 12 Aug 2004 (S.R. Mirick). A

few nonbreeding stragglers are occasionally found in June and July, as 1 at Newmarket 25 Jul 1998 (R.E. Stymeist *et al.*), 1 at Exeter 10 Jul 2002 (S.R. Mirick), and 2 at Rochester 31 Jul 2006 (S.R. Mirick). As noted by E.G. Robinson (*in* Foss 1994) there is not much preferred nesting habitat in the state for this species, so it is unlikely ever to become a common breeder. Presumed early southbound migrants have been 7 at Hampton 27 Jul 2004 (M. Harvey) and 1 at Newmarket 29 Jun 1997 (S.R. Mirick).

Fall. Earliest known certain fall migrants are 18 at Charlestown 8 Aug 1968 (W.W. Kidder) and 1 at White and Seavey Islands 12 Aug 2001 (D. Hayward), though possible early migrants have been suspected in the last week of July. Peak fall migration period is typically the first 2 weeks of September, and peak coastal fall count is 180 at Great Bay 12 Sep 1965 (R.W. Smart, D.W. Finch). Peak inland count is a mixed flock of 150–175 teal at Errol 9 Oct 1990, many of which were this species (C.J. Martin *et al.*), though 150 were recorded as early as 20 Aug 1967 (W. Riehl) at the Exeter wastewater treatment plant. Three at Star Island 16 Sep 1999 (R.W. Suomala *et al.*). Virtually all birds have left by the last week of October, the latest known records being 1 at Plainfield 6 Nov 1951 (L. Forsyth), 5 at Great Bay 22 Nov 1964 (D. Gallup), 2 at Rye 19 Nov 2008 (J.P. Smith), and singles at Rye 24 Nov 2007 and 2 Dec 2006 (both S.R. and J. Mirick).

Northern Shoveler *Anas clypeata*

Status. Uncommon spring and scarce fall migrant, rare in winter. Great increase in reports since 1960.

Early reports to 1950. The first state record was 1 shot by W. Brewster at Rye Beach 19 Aug 1871 (MCZ #291562) as reported by Baird, Brewer, and Ridgway (1884, Vol. I), and Allen (1903). Brewster (1924) records 1 shot at Lake Umbagog in fall prior to 1880 by a Mr. Wormell or his friends but on an unknown date and not certainly in New Hampshire. Dearborn (1903) mentions “a male taken in autumn some years ago at Hampton” by S. A. Shaw, and 1 was seen at Westmoreland on the Connecticut River 7 Apr 1935 by L. O. Shelley (1936b).

1950 to present. Found much more often in spring than in fall; occasional in winter.

Spring. Uncommon transient. Extreme dates are from 14 Mar 2006 when 2 were at Concord (I.C. MacLeod) to 1 at Nashua 12 Jun 1998 (R. Andrews). Of 54 spring birds recorded 1950–1980, the great majority were in April, only 9 were found in May, and 20 of the 54 were found in the interior, principally along the 2 major river valleys. A total of 13 were reported in spring 2009 (v.o.). Maximum spring count is 9 at the Exeter wastewater treatment plant 22 May 1998 (D.B. Donsker *et al.*), second

highest is 5 at Monroe 24 Apr 1972 (E. Emery, R.J. Bradley). A late migrant at Star Island 20 May 1999 (R. Suomala *et al.*) was the first known report for the New Hampshire Isles of Shoals. The sharp increase in spring records is doubtless related to the comparable but earlier increase of the species at the Parker River National Wildlife Refuge on Plum Island, MA, just 4 miles south of the state boundary, where it is now present all summer and is a regular seasonal migrant.

Summer. One straggler or very early migrant was at Little Cherry Pond, Jefferson 10 Jul 1997 (R.A. Quinn) and 1 lingering at Exeter 29 Jun 2008 (L. Medlock).

Fall and winter. Extreme fall dates are from 10 Aug 1972 (J.E. Cavanagh) when a hen was found at Exeter to 1 found there 1 Dec 2002 (M.G. Harvey, B. Griffith). Since 1950, most records have been in October, but peak count is 9 at Seabrook 20 Nov 2005 (S.R. and J. Mirick). In mild seasons, a few have appeared in early winter, nearly all at or fairly near the coast: 1 at Rye 5 Jan 1999 (R. Crowley), 1 at Plaistow 7 Jan 2000 (J. Stevens), 1 at Rochester 7–29 Jan 2008 (S. Young, D. Hubbard), 1 at Rochester 10 Jan 2007 (S.R. Mirick *et al.*), 1 at Stratham 29 Jan 2000 (R. Frechette *et al.*), and 1–2 at Rochester from 18 Dec 2001 to 20 Feb 2002 (S.R. Mirick, R.A. Quinn). A rare winter inland report is 1 from Hinsdale 31 Jan 2007 (E.A. Masterson).

Northern Pintail *Anas acuta*

Status. Regular spring and fall migrant both at the coast and inland, usually uncommon but occasionally common. Has wintered sparingly in recent years; sporadic summer stragglers, once possibly breeding. Formerly only a casual spring and fall visitor but greatly increased since the 1930s.

Early reports to 1950. The “Sprig-tailed Duck, *Anas acuta*,” reported by Belknap (1792) was surely this species, but it probably was uncommon in that era. Forbush (1912) suggests that the species suffered a great decline in New England by the mid-1800s which was probably reflected in New Hampshire, but both Palmer (1949) and Griscom (1948) felt that the population in ME and in New England as a whole had not varied much from 1865 to about 1930. The earliest specific records for New Hampshire are those of Brewster (1924) at the mouth of the Cambridge River at Lake Umbagog. He called it an “uncommon transient visitor in autumn” and recorded a total of 15 birds on only 5 occasions between extreme dates of 7 Sep (1888) and 20 Oct (1884). Dearborn (1903) called it a “rather scarce spring and fall migrant” at the coast but supplied no precise dates, and Allen (1903) and White (1924b, 1937) had nothing to add. Wright (1911) had only a single record of a young male at Cherry Pond 6 Sep 1908 (E. Bridge, G. Wellman, H.W.

Wright). Two were also seen at Cherry Pond 6 Sep 1919 (C.H. Rogers).

As pointed out by Richards (1952a), the general increase that began in the 1930–1940 period was not at first noticed in New Hampshire but surely occurred there as suggested by the few records available: 1 at Washington 3 Sep 1938 (G.E. Allen), 4 at Enfield Center 19–21 Sep 1941 (R.L. Weaver *et al.*), and 29 at Great Bay 9 Nov 1949 (T. Richards). The first known summer stragglers or very early fall migrants are single birds at New Hampton 9 Aug–10 Sep 1945 (V.H. Hebert) and at Rye 10 Aug 1947 (T. Richards *et al.*). There were 2 fall records in 1948; and in 1949 there were 2 spring and 8 fall records involving a total of 64 individual birds, 29 of which were at Great Bay 9 Nov 1949 (T. Richards).

1950 to present. A continued modest increase in reports, especially inland.

Spring. Extreme early spring arrival date for birds believed not to have wintered is 2 at Laconia 21 Feb 1969 (H.C. Anderson) and 4 at Hinsdale 28 Feb 2007 (E.A. Masterson). Peak spring migration is the last 2 weeks of March and the first week of April. Peak spring counts are 15–20 pairs at Meadow Pond, Hampton, 15–16 Apr 1977 (D.B. Kirwan); 44 at Hinsdale 27 Mar 2007 (S.R. Mirick *et al.*); 34 at Laconia 27 Mar 2004 (P.D. Hunt); and 25 surprisingly late on 23 Apr 1961 at Concord (K.E. Dymment *et al.*). This suggests that peak spring numbers inland can occur a week or so later than at the coast. Latest known spring migrant date is 17 May 1964 at Hanover (ASNH field trip), but all birds are usually gone by the last week of April.

Summer and breeding. Only 3 known July records: a drake at Errol 10 Jul 1952 (NHFG) and a drake at Harper’s Meadow 1 Jul 1987 (T. Richards). A hen with 4 ducklings well seen on 3 dates at Harper’s Meadow 2–13 Jul 1987 (E. Janeway) was probably this species, the only probable breeding record. Presumed nonbreeding summer stragglers were 1 at Rye 6 Aug 1969 (R.W. Smart), a female at Lee 16 Aug 1962 (O. Earle *et al.*), and 1 at Hampton 18 Aug 1958 (T. Richards).

Fall and winter. Six records since 1950 from 24 to 31 August are suspected of being extremely early fall migrants, including a flock of 22 at Errol 30 Aug 1964 (V.H. and R.C. Hebert). Peak fall migration is typically the first 3 weeks of October, and peak fall count is 119 flying south along the coast 1 Oct 2008 (S.R. and J. Mirick). Virtually all birds are gone by early December, a few occasionally lingering into January and even February. Since 1990, a total of over 40 birds have been recorded in January and February at coastal sites including the Rochester and Exeter water treatment plants in numbers from 1 to 4. There are at least 12 inland January and February records of at least 22 individual birds at Franklin (1969), Nashua (1993, 2000), Merrimack (1993), Tilton (2009), Lebanon

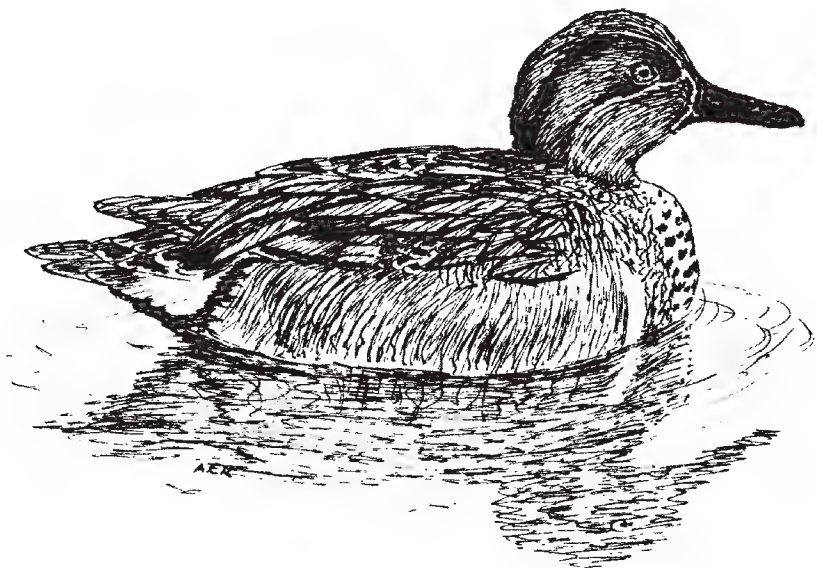
(2000), Hinsdale (2006, 2007, 2008), Monroe (2006), and Concord (2006). What is presumed to be the same individual female successfully wintered at Laconia for 6 consecutive winters beginning with the 1966–1967 season (H.C. Anderson *et mult.*).

Taxonomic Note. See Appendix I for report of a presumed hybrid between this species and Mallard.

Green-winged Teal *Anas carolinensis*

Status. A regular spring and fall migrant, a scarce local breeder, and an occasional summer straggler and winter resident. Formerly uncommon but greatly increased since the 1930s.

Early reports to 1950. The first, though tenuous, New Hampshire record is that of Morton (1632); it is included in Belknap's (1792) list. Forbush (1912) and others agreed that its numbers suffered a great decline in the second half of the 1800s, probably due to market hunting. Its abundance prior to that time is subject to debate, Coues (1868) considering it a common spring and fall migrant in New England and Phillips (1926b) feeling that it was never particularly common. Brewster (1924) found it only an "uncommon transient visitor in autumn" in



1871–1909 at Lake Umbagog. He found single birds on 10 occasions, at least 9 of which were in New Hampshire, between extreme dates of 4 Sep 1897 and 12 Oct 1885. He had no spring records or suspicion of nesting. Dearborn (1898) had only 1 record of 1 "killed near Tilton" and cited the report of 1 near Webster (C.F. Goodhue), both on unspecified dates. Dearborn (1903) considered it "of irregular occurrence" near the coast, most often in October. Wright (1911) never found it in the Jefferson region.

Allen (1903) described it as casual, having reports from only 3 localities: Lancaster, Charlestown, and Hampton Falls. Goodhue (1922) remarked that in the Webster area it was a "rather rare migrant...in fall. I have never seen it in spring." White (1937) had only 3 records from near

Concord: 1 shot in fall (L.J. Rundlett) of an unspecified year, 1 collected 16 Oct 1885 (F.S. Moulton), and 2 seen in Apr 1929 (G.P. Milne).

Griscom (1949a) thought that this species increased in New England as a whole 1910–1930 and increased sharply after 1930. This agrees with Palmer's (1949) data for ME, and the same pattern was probably reflected in New Hampshire. However, as Richards (1952a) points out, there are almost no records from this period that document an increase; the only 3 reports he had were of 10 at Westmoreland 7 Apr 1935 (L.O. Shelley), 2 at Hanover 24 Apr 1942 (F. West), and 2 pairs at Hanover 6 May 1943 (L. Forsyth). Richards (1952a) also notes that it has been recorded in the state annually since 1947: there was only 1 report of 2 birds in Oct 1948 but a burst of reports in 1949 with 51 birds reported in Apr and 62 in Sep–Nov at localities that had been checked regularly in prior years.

1950 to present. Steady increase until the 1980s, since which time its breeding population is listed as stable at a very low level by Hunt (2009b). Lacaillade (1975) reports an increase in the number shot by hunters 1950–1973, especially in 1963–1973.

Spring. Extreme early known spring record of a bird thought not to have wintered is 1 at Littleton 2 Mar 1972 (M.L. Fuller), though mean spring first arrival date 1952–2009 is 20 March. Peak spring migration period is the last 2 weeks of March and the first 3 weeks of April. Peak counts in the coastal region are 245 at Hampton 24 Apr 2009 (T. Bronson) and 226 inland at Hinsdale 27 Mar 2007 (S.R. Mirick *et al.*). Over 500 birds were seen in the lower Connecticut River valley in Mar–Apr 2007 (v.o.) though single-site counts over 60 are unusual inland. The last spring migrants usually leave areas where they are not thought to breed by the third week of May, such a late record being 1 at Rye 20 May 1970 (R.W. Smart). Stragglers were at Newmarket 3 Jun 2003 (S.R. Mirick), at Rochester 3 Jun 2009 (D. Hubbard), Hinsdale 8 Jun 2008 (E.A. Masterson), Hanover 28 Jun 1998 (D. Crook), and Rochester 30 Jun 2008 (D. Hubbard).

Summer and breeding. Occasional stragglers are found in June and July, both inland and in the coastal region, apparently unmated and presumably nonbreeding birds. The first proved state breeding record was of a female with 4 young at Little Cherry Pond, Jefferson, 10 Jul 1953 (T. Richards). The next known proved breeding record was a pair with 4 young at Dummer 7 Jul 1962 (T. Richards). Since then it has been recorded as a local and sporadic breeder. Foss (1994) only provides 4 probable and 3 possible breeding sites for this species for 1981–1986 at widely scattered locations, but also notes 3 subsequent confirmed breeding records, 1 each in 1987, 1988, and 1990. A pair was at East Inlet, Pittsburg, 19 Jun 1994 (R.A. Quinn, T. Richards *et al.*), 3 at Pittsburg 11–

12 Jun 1995 (D. Strong *et al.*), 1 there 29 Jun 2001 (E.B. Nielsen), and 15 (probably 2 families) there 12 Jul 2004 (T. and B. Richards).

Fall. The earliest certain southbound migration date is of a flock of 14 at the coast 8 Aug 1970 (H.C. Anderson), though a few birds that may have been migrants have been noted as early as the last week of July. Migrants are almost always reported by the last week of August, and the usual peak fall migration period is the last week of September and the month of October. Peak fall counts have ranged from 275–323 at Rochester in the 21 Oct to 6 Nov 2003 period (S.R. Mirick). A flock of 53 was north at Dalton 18 Nov 1998 (R.J. Bradley). The elevation records for the state are 2 at Lonesome Lake in Franconia Notch in the White Mountains 10 Sep 1978 (T. and B. Richards) and 1 at Upper Greeley Pond in Livermore 3 Oct 2011 (R.A. Quinn), both at about 2700 feet. Migration is usually over by the second week of November.

Winter. Stragglers occasionally linger to late December, 1 of which was at Errol 22 Dec 1966 (*fide* D.J. Abbott) and 1 of which was at the Isles of Shoals 29 Dec 1971 (*fide* A.C. Borrer). There are at least 10 January and February reports of 1–2 birds: Newmarket (2000, 2004), Milford (1996), Tilton (2002), Kingston (2002), Laconia (2003), Exeter (2004, 2006), and Hinsdale (2006). A female wintered successfully at Tilton in 1964–1965, and 1 wintered at Laconia in 1966–1967 (H.C. Anderson *et al.*).

Taxonomic note. See Appendix I for report of a presumed hybrid between this form and Eurasian Teal.

Eurasian (Common) Teal *Anas crecca*

Status. Occasional visitor, most likely from Europe or the Aleutian Islands (Gibson and Byrd 2007). This form was formerly considered a separate species from Green-winged Teal (AOU 1957) until 1983 (AOU 1983), is still so considered by several European authorities (e.g. International Ornithologists' Union, British Ornithologists' Union), and is so treated here. Drakes are readily distinguishable from Green-winged Teal. Reports have increased noticeably in recent years.

Reports. All single drakes and only in March and April except for once in May. One at North Hampton 15 Apr 1973 (D.W. Finch, D.J. Abbott, E.W. Phinney, L.G. Phinney; photo). Single birds seen at Hampton 23 Mar 1967 (E.W. Phinney), North Hampton 22 Apr 1972 (W.C. Chisholm, H.M. Card), Hampton 28 Mar 2004 (M.G. Harvey, S.R. Mirick *et al.*), East Kingston 14–15 Mar 2007 (S.R. Mirick, D.B. Donsker), Charlestown 31 Mar to 9 Apr 2007 (E.A. Masterson, H. Galbraith; photo), Keene 18 Apr 2007 (L. Tanino), 1 at Hampton 6–10 Apr 2009 (E.A. Masterson, L. Medlock), 1 at Charlestown 8–18 Apr 2009 (E.A. Masterson), 1 at Seabrook 8 May 2009 (S.R. and J. Mirick), and 1 at Hampton 8 Apr 2010 (S.R. Mirick).

Taxonomic note. See Appendix I for report of a presumed hybrid between this form and Green-winged Teal.

Canvasback *Aythya valisineria*

Status. Regular but rare spring and fall migrant, occasional in winter. Formerly only a very rare fall straggler until 1948; reports increased 1960–1980 but have declined since then.

Early reports to 1950. The first reference for New Hampshire is that of Belknap (1812) who listed “Red Head Quindar, *Anas ferina*,” a name still in use for the Common Pochard *Aythya ferina* of Europe with which Belknap would have been familiar. The next state records are those of White (1926): 1 shot by a hunter at Seabrook 4 Nov 1908 and sent to J. C. Hardy to be mounted, and 1 shot at Dover Point “about 1915” by G. F. Wentworth. Goodhue (1922) records 1 shot at Bradford about 1918 by a Mr. Billingham and another shot at Hampton in the fall of 1925 by Mr. M. Bartlett. The next known report is of 6 at Wentworth 16 Sep 1939 (R.L. Weaver), after which none were reported until 3 drakes were found at Great Bay 23 Nov 1947 (T. Richards) and 1 drake found at Tilton 4–9 Apr 1948 (T. Richards), the latter being the first published spring record for the state. Richards found single females at Hinsdale 10 Nov 1949 and at Laconia 14–17 Nov 1949. In 1950, 2 were at Durham 15 Mar (Jackson), 2 drakes were at Hinsdale 10 Apr (T. Richards), 1 drake was at Rye 2 Nov (T. Richards), 1 was at New Hampton 2 Nov (V.H. Hebert), and 1 was at Tilton 27 Nov (*fide* T. Richards).

The great increase in MA in 1905–1950 mentioned by Griscom and Snyder (1955) either was not reflected in New Hampshire or went unnoticed there. Palmer (1949) states that the species was only a straggler in ME during this period.

1950 to present. Reported nearly every year in this period, from more localities and in greater numbers in fall. Significant decline since 1980.

Spring. Extreme early migrant dates are 7 at Greenland 1 Mar 1997 (S.R. Mirick) and a drake inland at Woodsville 4 Mar 1972 (R.J. Bradley, M. Fuller), and latest known is 2 at Errol 26 Apr 1965 (V.H. Hebert), this also being the northernmost known record and the only recent spring report for Coos County. Peak spring migration period is the last 2 weeks of March and the first week of April. A pair was at Newmarket 3 Apr 1958 (T. Richards). Peak spring counts are 23 at Great Bay 6 Apr 1976 (D.J. Abbott) and 70 at Newington 28 Mar 1976 (E.W. Phinney *et al.*). Since 1980 numbers reported have been lower, only 1–3 birds reported per spring in some recent years, though 21 were reported in spring 2008 (v.o.).

Fall. Extreme early fall date is 1 at Exeter 21 Sep 1971 (E.W. Phinney, D. Holmes) and latest date for birds believed to be migrants is 2 Dec at Great Bay in 1962 (C. Casas *et al.*), in 1967 at Greenland (E.W. Phinney), and 8 at Epsom in 1975 (B.R. Richards). A flock of 30 was found at Great Bay 14 Nov 1952 (R.W. Smart, D.W. Finch), and 6 were there 4 Nov 1953 (D.W. Finch *et al.*). A drake was at Chesterfield 26 Nov 1957 (T. Richards). The vast majority of birds reported in fall in 1960–1980 were found in the first 3 weeks of November, the high count being 60 at Great Bay 7 Oct 1984 (R.W. Stephenson). In general, fall numbers have also dropped since the mid-1970s.

Winter. Birds found on salt water at this season are 1 drake at Newington 12 Jan 1969 (L.G. and E.W. Phinney), a flock of about 15 that wintered at Durham in the 1962–1963 season (v.o.), 3 at Greenland 27 Feb 1974 (E.W. Phinney), 1 at the coast 3 Jan 1981 (A.C. Borrer), 3 drakes at Great Bay 3 Feb 1993 (S. Bailey), 1 at Durham 11 Feb 1995 (A. and B. Delorey), 2–7 at Newmarket 22–24 Feb 1997 (S.R. Mirick *et al.*), 2 at Newmarket 14 Feb 1999 (S.R. Mirick), 2 at Stratham 18 Feb 2001 (S.R. Mirick, B. Smith), 1 at Newmarket 2 Feb 2002 (S.R. Mirick), 1 at Exeter 16–17 Jan 2005 (M. Harvey *et al.*), 2 at Greenland 26 Jan 2008 (B. Griffith *et al.*).

The known inland winter records are a drake at North Walpole 24 Feb 1965 (T. Richards); 4–17 in the Meredith–Laconia area 29 Jan to 20 Feb 1976 (K.C. Elkins, H.W. Parker *et al.*), and 2–13 (possibly some of the same birds) at Ashland 28 Jan to 19 Feb 1975 (J.H.V. Fisher), 3 at Warren 22 Feb 1977 (S.A. Fogleman), 1 at Laconia 24 Feb 1977 (S.A. Fogleman), 1 at Dover 23–24 Feb 1966 (L.G. and E.W. Phinney), 1 at Sanbornton 21 Jan 2002 (P.D. Hunt), and possibly the same bird there 9 Feb 2002 (J. Williams). One was at Sanbornton 15 Dec 2002 (H.C. Anderson).

Redhead *Aythya americana*

Status. Rare but regular spring and fall migrant, primarily in March and November. A straggler prior to 1950; reported annually since the mid-1960s, but much scarcer since the 1980s.

Early reports to 1950. The first certain state record is that of a flock of 15 near the outlet of Lake Umbagog 20 Oct 1882 of which 2 were taken by a Mr. Watson and identified by C. F. Batchelder as reported by Brewster (1924). Aside from 1 other record from the ME part of the Lake, this was Brewster's only record in 1871–1909. Dearborn (1903) called it "a migrant sometimes taken in autumn" and mentioned finding "several specimens in local collections" but gave no other details. Smith (1921) mentions 1 that spent the 1918–1919 winter in the Connecticut River near Woodsville, the first known such winter

record. White (1924b) knew of old undated records near Concord and of a specimen taken in Hopkinton about 1900, but he had no other data and no additional records by 1937. Single birds were found at Hinsdale 29 Oct 1940 and at Rye 5 Oct 1941 (L.R. Nelson), 1 of which was collected for Nelson's personal collection (Keith 1975a).

1950 to present. Significant increase in reports into the 1960s, but has become scarcer again from the 1980s to date. The majority of both spring and fall reports are from the coastal region. Masterson (2002a) reports "55 records involving 163 birds in 24 different years" 1952–2001; of these records over 40% were from Great Bay.

Spring. At least 48 individuals were recorded 1950–1980 but only 25 were reported 1981–2009. Earliest known arrival is 6 Mar in 1966 at Great Bay (L.G. and E.W. Phinney), in 1976 at Lee (C. Olsen), and in 2008 at Greenland (B. Griffith *et al.*). Latest migrant dates are 2 at Littleton 8 May 1997 (R.J. Bradley), 4 at Dummer 1 May 1977 (R.C. and V.H. Hebert), and 2 at Littleton 16 May 2002 (R.J. Bradley), the only known reports for that month. High spring count is 6 on Great Bay at Greenland 6 Mar 2008 (S.R. Mirick, B. Griffith). A straggler drake was at Jackson 13 Jun 1964 (J. Warren).

Fall and winter. Two drakes found at Hampton 16 Aug 1958 (V.H. Hebert *et al.*) were exceptionally early. Otherwise, the earliest report is from 1 Oct 1974 (K.C. Elkins, L.C. Rising). At least 68 fall birds were recorded 1950–1980, 42 (62%) of which occurred in November; only 32 birds were reported 1981–2009 of which 18 (56%) occurred in November. It has become much more irregular and less than annual in fall since 1980. Peak counts have been 14 at Great Bay 14 Nov 1952 (R.W. Smart, D.W. Finch) and 13 at Chesterfield 31 Oct 1955 (T. Richards); more recent high counts have been in the 1–6 range. In mild seasons a few may linger into late December as 2–5 at Great Bay 14 Nov to 31 Dec 1953 (G.P. Baker, T. Richards *et al.*). Two were at Great Bay 17 Jan 1965 (D. Gallup), 1 was at Durham 29 Jan 1995 (S.R. Mirick *et al.*), 3 were at Greenland 28 Jan 2006 (D.J. Abbott *et al.*), and 1 was at Lee 26 Feb 1976 (C. Olsen).

Ring-necked Duck *Aythya collaris*

Status. Common spring and fall migrant, a local but regular breeder that has occasionally wintered. Only a rare visitor prior to the 1920s; increased as a migrant from then to about 1940 after which a great increase occurred.

Early reports to 1950. The first state record appears to be a specimen collected by C. F. Goodhue (1922) at Penacook Lake, now known as Long Pond, in West Concord in Nov 1886. The next reports were all by Brewster (1924) from Lake Umbagog: 1 thought to be this species 2 Oct 1888, a pair seen 19 Sep 1889, 6 on 25 Sep 1894 including 1 collected, and 1 at Errol Hill Pond 24 Sep 1895. Dear-

born's (1903) only record was of an adult drake shot at Little Bay in fall about 1900 (G.F. Wentworth). Forbush (1925) considered it a "very rare migrant along (the) coast of...New Hampshire." The first summer record is of a drake at Sandwich 3 Jul 1932 (O.H. Coolidge, W.P. Wharton *et al.*) which remained several days, and 1 was found at Hinsdale 17 Oct 1932 (L.R. Nelson). In 1939, Nelson found 1 in the spring and shot 6 out of a larger flock at Hinsdale 27 Oct. One of these was in the mounted collection in the NHFG Committee Hearing Room in the State Capitol Building, Concord, but it was lost when the mounted collection there was moved to a new NHFG headquarters which was destroyed by fire 21 Apr 1984 (Swanson 1984). One was found at Hanover 29 Sep 1941 (E.W. Arnold).

Since 1943, it has been reported in New Hampshire every year. As outlined so well by Richards (1952a), from 1947 to 1950 a dramatic increase occurred, and he observed at least 770 individual birds in this period. As reported by Mendall (1958), this species' breeding range expanded east from Michigan in 1928–1950, and the number of New England records rose as that period passed. Mendall (1958) continues: "Following a waterfowl reconnaissance of New Hampshire's marshes, Provost (1942) reported the ring-neck to be a regular spring migrant in the Connecticut (River) Valley and also along the coast in fall. He found no evidence of breeding."

The first proved state breeding record was a hen and 1 or 2 young found by H.R. Siegler at Fish Pond, Columbia, in the summer of 1947. The species was also found at the Cherry Ponds that summer, but T. Richards did not prove it breeding there until 26 Aug 1948, though he (1965a) suspected that it may have been breeding there as early as 1940. The number of known breeding pairs for the first few years after they were discovered were 6 in 1948, 12 in 1949, 13 in 1950, 8 in 1951, 8 in 1952, and 16 in 1953 (Richards 1951b; Lee 1953, 1954b).

1950 to present. Continued increase as a migrant, breeding population stable since 1990s.

Spring. Earliest known spring arrivals are 1 at Hinsdale 28 Feb 2007 (E.A. Masterson), 1 Mar 1976 at Exeter (E.W. Phinney), and 20 at Kingston 1 Mar 2000 (K. Folsom). Mean first arrival date for 1952–2009 is 12 March, and peak migration period is usually the last 2 weeks of March and the first week of April. High spring count known before 1965 was at least 64 at 3 locations in Mar 1949 (v.o.). From then through the 1990s, peak migrant numbers of 100 or more became routine; highest counts now are 350 at Kingston 29 Mar 2008 (S.R. and J. Mirick) and 428 at Hinsdale 9 Apr 2003 (D.J. Abbott). An unusual 700 birds were found in the lower Connecticut River area mid-Mar through mid-Apr 2007 (v.o.). The last migrants have usually gone through by the first week of May, extreme late dates indistinguishable from summering birds.

Summer and breeding. When it first colonized New Hampshire, it was a scarce local breeder confined to the White Mountain region and Coos County. Breeding was first confirmed during 1947–1960 at the 2 Cherry Ponds, Jefferson; Fish Pond, Columbia; Mirror Lake, Whitefield; Scott's Bog, Pittsburg; and the Lake Umbagog region. The first breeding pairs found in the southern part of the state were discovered later: at Perkins Pond, Troy, in 1962 and 1964, and in both Concord and Hopkinton in 1965. Richards (1952a) notes that "broods may hatch in early June, but do not as a rule until late June or July and may hatch as late as August 1 (the young...seen August 15, 1950 were estimated not over 2 weeks old when observed)." The number of broods known statewide has varied widely since 1953, ranging from none in 1963 to over 10. Foss (1994) reports 7 confirmed and 3 probable breeding sites in the 1981–1986 atlas period and dates for fledged young from 17 July to 21 August. It appears that the number of breeding pairs fell slightly from the 1960s until the 1990s but has remained stable since.

Fall and winter. Earliest fall migrants in areas where the birds are not thought to have bred were 1 at Manchester 3 Aug 1999 (R. Andrews) and 4 at Hopkinton 29 Aug 1963 (M.N. Dodge *et al.*). Generally it is not as widespread or numerous a migrant in fall as in spring, possibly due to fall hunting pressure. Peak migration period is usually the last week of October and the first 2 weeks of November; peak counts are 320 at Kingston 5 Nov 2008 (T. Bronson), 300 at Salem 5 Nov 1999 (K.E. Folsom), and 300 at Errol 27 Oct 2005 (R.A. Quinn, T. Richards), but including those reports there are only a dozen fall counts over 100 since 2000. The last migrants are usually gone by the first week of December, though flocks in the 10–45 range have occurred into late December since 1998. Stragglers have been found irregularly at inland lakes into January and even February at Tilton, Auburn, Lebanon, Derry, Hinsdale, Sanbornton, and Laconia. Single birds successfully wintered at Laconia through the seasons of 1954–1955, 1969–1970, 1970–1971, and 1975–1976.

Greater Scaup *Aythya marila*

Status. Common to locally abundant spring and fall transient along the coast where it regularly winters in moderate numbers; regular spring and fall migrant and irregular winter visitor inland. Some decline prior to 1910–1920 period after which it has become common again.

Early reports to 1950. The "Wigeon, *Anas marila*," listed by Belknap surely belongs here. Both Forbush (1912) and Griscom (1949) mention that this species declined from the mid-1800s to about 1910. The first positive state records are those of Brewster (1924) at Lake Umbagog in 1871–1909. He found it a "transient visitor in autumn,

appearing regularly and not uncommonly, usually during the month of October.” His extreme dates within New Hampshire were 22 September to 27 October, and he once saw a flock of 30 birds.

Dearborn (1898) listed it as a rare migrant in Belknap and Merrimack Counties on the authority of C.F. Goodhue, and later Dearborn (1903) said that it was found “frequently...at Great Bay during the (spring and fall) migration periods,” though it was then unknown in winter in the coastal region. Allen (1903) found it “an uncommon migrant in fall along the coast, and occasional inland;” he had no spring records and only 2 certain inland records: 1 taken at Webster on an unspecified date by C. F. Goodhue and 1 shot at Concord about 13 Dec 1899. Wright (1911) had only 1 record of a hen shot at Pond of Safety in Oct 1908 (E.L. Dorr). Goodhue (1922) simply stated that he considered it uncommon in the coastal region and rare inland. White (1924b, 1937) had only 4 reports for the Concord region: 1 on 24 Nov 1924, 1 on 14 May 1926, a “few” on several dates in Apr 1928, and 1 on an earlier unspecified date. Shelley (1936b) reported 1 on the Connecticut River near Westmoreland 31 Mar 1935 and a flock of 33 there 7 Apr 1935.

Richards (1952a) says that in 1939–1951 “there [was] no appreciable change in the status of the species as a migrant inland,” continuing as uncommon. He points out that it began to winter regularly in Great Bay for the first time about 1937 (*fide* C.F. Jackson) and that it was first found wintering inland in the Laconia–Tilton area when 1 was present from 14 Feb 1947 through the rest of the winter. He continues: “In 1949 a flock of 21 was observed at various times from January 7 on, 15 staying as late as March 19. In 1950 a single hen was found on Silver Lake, Tilton, February 7, and on January 12, 1951 a flock of 6 to 8 was observed at Laconia, but was not present January 30. A single hen was seen there again on December 27.”

1950 to present. The increase from the 1910–1920 period has continued; found in greater numbers and more frequently in spring than fall, both inland and at the coast, though fall numbers have been slightly lower since 1970.

Spring. First spring coastal arrivals appear by the second week of March, precise dates not determinable due to the presence of wintering birds. Peak coastal spring migration is usually the last week of March and the first week of April. High known spring counts are 9000 at Great Bay 23 Mar 1972 (L.G. Phinney) and 10,000 there 30 Mar 1970 (V.H. Hebert), though counts of 500–1000 have become routine only since 1965. By contrast, the highest count Richards (1952a) ever had for Great Bay was 750 on 13 Mar 1951. Latest known spring reports on salt water are 1 at Great Bay 8 Jun 2002 (S.R. Mirick) and on 25 Jun 2002 (S.R. Mirick), though all birds are usually gone by the end of April and May records are few. All big flocks ever recorded have been at Great Bay.

Earliest inland spring reports are 1 at Hinsdale 23 Feb 2008 and 2 there 8 Mar 2009 (both E.A. Masterson), 1 at Kingston 12 Mar 2006 (S.R. Mirick), and a drake at Concord 14 Mar 2006 (R.A. Quinn), though usual arrival and peak migration period in the interior river valleys is not until the last week of March and the first 2 weeks of April, slightly later than at the coast. Highest known inland spring count is 50 at Laconia 15 Apr 1960 (R.W. Smart *et al.*). Latest inland spring records are 1 at New Hampton 16 May 1978 (K.C. Elkins) and a drake at Concord 25–26 May 2005 (R.A. Quinn). The only known inland records for June and July are for 1 straggler at Laconia 29 Jun to 6 Jul 1950 (V.H. Hebert), 6 males at Big Squam Lake, Sandwich 14 Jul 1979 (B.S. Ridgely *et al.*), a possible late spring migrant at Exeter 6 Jun 1998 (A. and B. Delorey), and a bird believed to be this species at Brentwood 21 Jul to 9 Sep 2005 (T. Bronson).

Fall. Earliest known coastal migrants were 2 at Newmarket 2 Sep 1999 (S.R. Mirick) and 4 at Great Bay 3 Sep 1965 (R.W. Smart, D.W. Finch). Fall migration usually peaks at the coast in the last week of October and the first 2 weeks of November, the highest known count being 2800 at Great Bay 14 Nov 1965 (R.W. Smart). Fall arrival in numbers is variable, however, as suggested by counts at Great Bay of 2100 as early as 19 Oct 1961 (R.W. Smart, V.H. Hebert *et al.*) and 9000 there 4 Dec 1960 (*fide* V.H. Hebert). Generally, fall numbers are lower than in spring (counts over 1000 first becoming routine about 1958 and continuing through the 1960s) but such numbers have been unreported since then. All flocks of 1000 or more ever recorded have been at Great Bay. There has been a modest decline from the early 1970s to date. Many migrants have left by mid-December, but occasionally higher numbers linger later in milder seasons, exceptional cases being 3500 at Great Bay 14 Jan 1962 (R.W. Smart, V.H. Hebert) and 3056 there 28 Feb 1998 (A. and B. Delorey). Mean numbers on coastal CBCs have been surprisingly stable over the years: 470 in the 1950s, 401 in the 1960s, 394 in the 1970s, 424 in the 1980s, 464 in the 1990s, and 502 in the 2000s.

Earliest inland “fall” record is of 1 at Exeter 4 Aug 1968 (E.W. Phinney), the only known report for the month of August. It is otherwise unreported inland until 1 at New London 9 Sep 1960 (K.C. Elkins). Highest known inland fall count is 75 at Littleton 19 Oct 1967 (R.J. Bradley), though fewer than 10 other inland fall counts over 30 are known. Most inland fall migrants are noted from late October until mid-November as at the coast, after which only a few stragglers and wintering birds have been found. The only such straggler known from north of the White Mountains is 1 at Pittsburg 30 Dec 1952 (F.T. Scott).

Winter. Numbers varying from only a few to several hundred have wintered at Great Bay in most years since 1960,

and 1600 were there 27 Feb 1974 (E.W. Phinney), 800 there 26 Feb 1999 (S.R. Mirick), and 900 there 3 Mar 2001 (S.R. Mirick, D. Hayward) when all of Great Bay did not freeze over all winter. Occasional birds are usually found elsewhere in the coastal region. Winter coastal waterfowl surveys have been highly variable from year to year ranging from 0 to 1800 but on balance there has been an increase from a yearly mean of 115 in 1952–1959 to 896 in 2000–2009 (E.G. Robinson at NHFG pers. comm.). Inland, the only locality where birds have occurred in January or wintered with any regularity is Laconia. Single birds or pairs wintered there in the 1963–1964, 1966–1967, and 1970–1971 seasons; 2 were at Tilton 23 Feb 1975 (V.H. Hebert) and single birds were at Lebanon and Plainfield 1 Feb 2003 (S. Sturup).

Lesser Scaup *Aythya affinis*

Status. Regular but uncommon spring and fall migrant, unknown in summer and very rare in winter, principally found in the interior. Only known as a straggler from the late 1800s to 1960, since which time it has increased.

Early reports to 1950. The first state record was that of a young male collected at Lake Umbagog 30 Oct 1884 by Brewster (1924), the only certain record he had there 1871–1909. Dearborn (1898) mentioned it for Belknap and Merrimack Counties only on the authority of C. F. Goodhue, and Dearborn (1903) had no reports for the coastal region except for a specimen in S. A. Shaw's collection which lacked data. Allen (1903) reports only that C. F. Goodhue once found it near Webster and that G. H. Thayer once observed it in fall at Dublin Pond. Goodhue (1922) merely called it uncommon in the coastal region and rare inland but provides no specific dates. White (1924b, 1937) could only say that 1 was taken by L. J. Rundlett near Concord in an unspecified prior year. Wright (1911) saw what he thought was a young male of this species at Cherry Pond 30 Sep 1909, his only record for the Jefferson region. Phillips (1934) said it had declined greatly since 1900 in the entire northeast. L. R. Nelson collected 1 at Rye Beach 18 Oct 1939, formerly in the mounted collection in the NHFG headquarters in Concord that burned down 21 Apr 1984 (Swanson 1984).

One was at Hanover in Nov 1939 (R.L. Weaver), 15 were at Enfield Center 21 Sept 1941 (L. Forsyth *et al.*), 1 pair was at Whitefield 3 Nov 1941 (D.J. Lennox), 1 was at Hanover 17 Oct 1943 (W.E. Lanyon), a female was at New Hampton 9 Apr 1945 and a pair was there 1 Oct 1946 (V.H. Hebert), and 5 were at Hinsdale 29 Mar 1949 (R.H. MacArthur *et al.*). Four were found at Andover 22 Apr 1949 (K.C. Elkins), 8 were at Lake Winnisquam 31 Dec 1949 (R. Perkins), a presumed female was at New Hampton on the highly unusual dates of 29 Jun to 6 Jul 1950 (V.H. Hebert), a drake was at Laconia 5 Apr 1951

(V.H. Hebert), and 25 were at Pittsburg 26 Oct 1952 (R.B. Emery *et al.*). The following reports are by T. Richards: 2 at Tilton 15 Apr 1947, 2 there 19 Apr 1949, a pair at Sandwich 22 Apr 1949, a drake at Rye 5 Oct 1950, and 1 at Sandwich 1–13 Nov 1950.

As Richards (1952a) writes: “The history of the Lesser Scaup in the northeast in general is clearer than its history in New Hampshire. Forbush (1912) called it a rather uncommon or rare migrant in New England, but mentioned a decrease, thus agreeing with Phillips (1922–1926) and Griscom (1948). The latter describes a slight decrease before 1910, and a much more serious and sudden decrease in the late twenties, from which the species has not recovered. There is every reason to believe that it is scarcer than ever in New Hampshire (one record in 1952) despite scattered reports since 1939.”

1950 to present. The modest increase that began in the late 1940s has continued. The great majority of records are from the interior or occasionally from favored coastal locations such as Great Bay. Numbers recorded in spring and fall are about equal.

Spring. Extreme dates statewide are from 1 Mar in 2000 when 4 were at Newmarket (S.R. Mirick, P. Lacourse) and in 2008 when 1 was at Hinsdale (E.A. Masterson) to 14 Jun 1970 when a pair was at Second Connecticut Lake, Pittsburg (T. Richards). Most spring birds are found in the last week of March and the first 2 weeks of April; high spring count is 43 at Exeter 25 Mar 2010 (S.R. Mirick) of which 39 were still present 31 Mar 2010 (L. Medlock).

Summer. The only known report is 1 at the Exeter wastewater treatment plant 12–25 Jul 2002 (S.R. Mirick, J. Lawrence).

Fall and winter. An exceptional early report is 2 at Jefferson 30 Aug 1978 (J.C. McIlwaine). Otherwise the earliest fall report is 1 at Littleton 25 Sep 1978 (R.J. Bradley) and 25 Sep 2002 at Newmarket (S.R. Mirick), the majority of birds usually found in the last week of October and the first 2 weeks of November. One at Hanover 3 Oct 1954 (H.C. McDade *et al.*) and 3 at Chesterfield 9 Oct 1954 (T. Richards). High fall counts other than the 1952 report cited above are 20 at Pittsburg 19 Oct 1969 (F.L. Scott) and 23 at Jefferson 7 Oct 2000 (D. Govatski). Latest known migrants that did not winter are 3 at Laconia 18 Dec 1971 (H.C. Anderson). The first winter stragglers were 1 at Laconia 30 Dec 1967 (CBC), 1 at Portsmouth 12–13 Jan 1968 (D.J. Abbott *et al.*), 1 at Seabrook 8 Feb 1971 (E.W. Phinney), and 1 that wintered successfully at Laconia 26 Jan to 4 Mar 1963 (V.H. Hebert). Since 1975, other inland reports from late December through February have been at Bow (1976), Laconia (1975, 1990, 1991), Concord (1983), Hancock (1991), Sunapee (1993), Keene (1999), Manchester (2004), and Exeter (2009). Reports in the same period in the coastal region

have been at Rye (1979, 2004), Lee/Durham (1991, 1995, 1998, 2005), and on the Coastal CBC (1977, 1990, 1991, 2008, 2009).

King Eider *Somateria spectabilis*

Status. Rare and irregular late fall, winter, and early spring visitor to the coastal region and the Isles of Shoals. Five inland records.

Early reports to 1950. The first certain record for the state is that of a hen shot at Hampton by S.A. Shaw, probably in 1880–1900 but on a date now lost, first recorded by Dearborn (1903). He referred to the species as an “irregular visitant,” suggesting that it perhaps occurred more often than his 1 record indicates; Goodhue (1922) had only the same record. Richards (1952a) states that, “There is no evidence of any change in the status of this species in New England in historical times, though...it may have suffered somewhat from the depredations of down and egg hunters in...part of its...breeding range,” in the 1800s. Aside from this suggestion, there is no apparent reason for the complete absence of reports between 1903 and 1948. In the latter year a flock of 11 was found at Great Boar’s Head, Hampton, 11 Jan (G. W. Cottrell, Jr.), and 13 were there 23 Feb (H. Parker). The next record was of 1 at the same place 23 Jan 1953 (P. Keenan), presumably the same individual still present the following 22 Mar (R.E. deLancey). The first inland record is that of a hen collected at Keene 10 Dec 1940 by L. R. Nelson. This specimen, mislabeled as “Northern Eider” and first correctly identified by T. Richards, was on display in the NHFG headquarters in Concord until destroyed by a fire 21 Apr 1984 (Swanson 1984); it was the only known specimen for New Hampshire. This is the entire known record for the state before 1950.

1950 to present. Reported every winter 1955–1972, inexplicably seldom 1973–1995, and every year 1996–2009. While this suggests an increase, much of the change is probably due to intensified fieldwork.

Fall and winter to spring. Extreme dates on the mainland coast are a possibly oversummering bird or extreme early migrant at Rye 13 Aug to 28 Sep 2004 (S.R. Mirick *et al.*) to 1 at Seabrook 30 Jun 1999 (A. and B. Delorey). There are a few reports by late September and in October, typical arrival is by mid-November but in some years it has not been found before January. Has appeared twice at Great Bay: 22 Feb 1970 (R.W. Smart *et al.*) and 8–13 Dec 2002 (M. Patten, R.A. Quinn *et al.*). There are over 10 records of birds lingering through much of the winter. The only other notable grouping of reports is from mid-March to early April, possibly produced at least in part by northbound migrants that wintered farther south. Maximum counts at any season are 13 at Hampton 3 Apr 1971 (D.W. Finch) and 7 at New Castle 9 Feb 1991 (S.R.

Mirick). All birds have usually left by mid- to late May.

Extreme dates of 8 records at the Isles of Shoals are 1 at White and Seavey Islands 25 Aug 1997 (S.R. Mirick *et al.*) to 2 at Star and White and Seavey Islands 17–27 Jun 2004 (E. Ring, D. Hayward *et al.*).

Summer. Lingerers have been 1 at Hampton 20 Jun to 1 Jul 1998 (D.B. Donsker *et al.*), 1 at White and Seavey Islands 13 Jul 2004 (E.A. Masterson *et al.*), and 1 there 7 Jun to 8 Jul 2007 (D. and M. Hayward *et al.*).

Inland reports. In addition to the 1940 record at Keene, 2 inland reports surely involve the same individual bird, a hen which appeared with a subadult drake at Laconia 13 Dec 1970 (H.C. Anderson); the drake was seen only that day, but the hen remained until 15 May 1971 (R.W. Smart, H.C. Anderson). The same female is believed to have returned to Laconia by 13 Nov 1971 (H.C. Anderson *et al.*) and was last seen there 15 Apr 1972 (H.C. Anderson). A subadult drake was at Rochester 2 Dec 2003 (S.R. Mirick), and another subadult drake was at Concord after a strong northeast storm 9 May 1977 (T. Richards, R. Beyer). The only known report from Great Bay is of an immature male at Stratham 8–13 Dec 2002 (M. Patten *et al.*).

Common Eider *Somateria mollissima*

Status. Regular and common spring and fall migrant and winter resident along the coast and at the Isles of Shoals; only a straggler inland. Breeds at the Isles of Shoals, and breeding is suspected on the mainland (*fide* E.A. Masterson). Declined greatly during the 1800s, the population remaining low until the 1930s and increasing sharply from the 1940s to date.

Early reports to 1950. First reported for the state by Belknap (1792) as the “Sea Duck, *Anas molissima*,” at which time it was apparently still fairly common. As given by Richards (1952a), “There is some evidence, mentioned by Forbush (1912), that the species once nested as far south as MA, and it is therefore not unlikely that it also nested at the Isles of Shoals until these islands were settled, during the seventeenth century.” In any case, Thaxter (1870) found it in winter at the Isles of Shoals, though by this time the breeding population on the New England coast and as far north as Labrador had been heavily persecuted by settlers and commercial hunters for its down, eggs, and flesh as described by Richards (1952a) and others, and its numbers were greatly reduced.

Dearborn (1903) considered it “...of irregular occurrence at Hampton,” and Allen (1903) called it “not uncommon” in fall, winter, and spring, though later (1909) he considered it “uncommon.” Richards (1952a) continues: “Griscom (1948) considers that a ‘serious decrease’ in the period 1865–1910 [in New England] was followed by a

‘slight decrease’ in the next 20 years. He points to an increase in the following decade, which became a ‘great increase’ after 1940. While Griscom refers largely to wintering populations off the coast of MA, Palmer (1949) describes a great recovery of breeding populations on the coast of ME at about the same time. The recent history of the Common Eider in New Hampshire is not clear. It appears to have been entirely unreported in New Hampshire between 1909 and 1931.” The 1931 record was an inland one given in more detail below, and it was not until 18 Jan 1948 when 12 were found at Hampton (N.L. Hatch) that coastal records resumed with any regularity, the general increase in the 1940s finally being reflected in New Hampshire waters. The first counts for the state over 50 birds were 80 at the coast 13 Mar 1951 (T. Richards) and 85 at Hampton Beach 19 Nov 1952 (C. deWindt).

1950 to present. Continuation of the increase that began in the 1940s, especially since the 1960s.

Fall and winter. Extreme early fall migrant records are 2 at the Isles of Shoals 8 Sep 1968 (D.W. Finch *et al.*) and 12 Sep 1965 (E.W. Phinney) when a flock of 11 appeared at Hampton; these records were made long before birds summered regularly or bred at the Isles of Shoals. Fall arrival in numbers can be as early as the first week of September: 500 at Star Island 5 Sep 2009 (S.R. Mirick *et al.*). However, usual major arrival is not until the second week of October, and peak fall migration period, though variable, is the last week of October and the first 3 weeks of November. Peak fall count is about 2500 at the Isles of Shoals 17 Nov 1968 (ASNH field trip), though counts over 500 only date from 1964, and numbers over 1000 are still considered unusual. Most migrants have passed through by mid-December. The species is more common both as a migrant and as a winterer at the Isles of Shoals than anywhere else in the state by far. Winter numbers there have averaged several hundred in recent years which compares with means for the Coastal CBC of 16 in the 1950s, 7 in the 1960s, 70 in the 1970s, 34 in the 1980s, 119 in the 1990s, and 70 in the 2000s.

Spring. First spring migrants are usually suspected by early March, and the available data suggest a peak spring migration period in the last week of March and the first 2 weeks of April. Unfortunately, there are almost no records from the Isles of Shoals in this period. Latest known record at the mainland coast in spring is 2 on 11 Jun 1967 (L.G. Phinney *et al.*), and latest presumed migrants at the Isles of Shoals were 2 there 6 Jun 1971 (ASNH field trip). Peak spring count was 275 at Star Island 30 May 1967 (ASNH field trip), all recorded before 1975 when higher numbers began to summer along the coast and at the Isles of Shoals.

Summer and breeding. June to August records along the coast and at the Isles of Shoals have become routine since

the 1970s and probably include some nonbreeding birds; flocks in the 20–50 range were occasionally observed during these months 1975–2000. Exceptional counts were 150 at White and Seavey Islands 20 Jun 1995 (P.D. Hunt), 214 near Star Island 22 Jun 1997 (R.W. Suomala), and 215 at White and Seavey Islands 8 Aug 1999 (D. Hayward, D. Trested). Adults with broods of young began to be seen along the mainland coast occasionally 2000 to date. Summer numbers have risen slightly since 2000, especially at White and Seavey Islands: 252 there 16 Jun 2001, 641 there on 14 Jun 2000, numbers in the 170–235 range 1 Jun to 9 Jul 2002 (all D. Hayward *et al.*), and 250 there 10 Jun 2004 (M. Barney *et al.*). Numbers there often taper off by the end of July.

Common Eiders began breeding at the Isles of Shoals by the late 1970s. Twenty birds were found north of Duck Island 13–21 Jun 1972 (A.C. Borrer). In Jun 1977 an adult female with 4 ducklings was seen near Lunging Island, strongly suggesting breeding there, and a female with young was seen there again in 1978. Breeding there was confirmed 28 May and 19 Jun 1980 when a female with 6 young and a nest with warm eggs were found and photographed, respectively. Ten nests were found on Lunging Island in 1983, and in 1986, 5 pairs bred there (A.C. Borrer *in* Foss 1994). Two hundred twenty were found at Star Island, at least half ducklings, 18 Jun 1994 (A. and B. Delorey). At Star Island, 107 chicks were observed 6 Jun 2000 but only 22 could be found the next day after a northeast storm (R.W. Suomala). Flocks consisting of both chicks and adults along the mainland coast have been found regularly in June at least since 2000, possibly from nests on islands in ME at the mouth of Portsmouth harbor: 90 chicks with adults 15 Jun 2008 and 69 chicks with 105 adults 14 Jun 2009 (both S.R. and J. Mirick). Not confirmed to breed on the mainland coast.

Inland reports. Has occurred inland as a straggler 10 times in spring and fall. In spring, 3 males were on the Connecticut River in Cheshire County 31 Mar–7 Apr 1935; 2 males and 6 females were at Westmoreland 19 Apr 1931; and 4 males and at least 4 females were at West Charlestown on 18 Apr 1932, all observed by L. O. Shelley (1931b, 1932c, 1936b); 8 at First Connecticut Lake 21 May 2006 (M.G. Harvey; photo). In fall, a drake was at Amherst 1 Nov 1960 (T. Richards), 1 at Hanover 29 Sep 1996 (L. Bunten), 1 at Rochester 11 Oct 2005 (S.R. Mirick; photo), 1 at Jefferson 23 Oct 1996 (D. Govatski), 1 at Bartlett 22 Oct 2003 (R. Crowley), and 1 at Littleton 22 Oct 2003 (S.B. and M. Turner).

Taxonomic note. The local breeding race is the form *S. m. dresseri*. There is no known extant specimen of the race *S. m. borealis* for the state though it likely occurs occasionally since it has been taken 3 times in MA (Veit and Petersen 1993). The specimen of this race formerly in the

L. R. Nelson collection at Winchester was taken at Newburyport, MA (Keith 1975).

Harlequin Duck *Histrionicus histrionicus*

Status. Irregular and uncommon late fall and winter visitor to the coast and the Isles of Shoals. Recorded inland 3 times. It apparently declined sharply from the mid-1800s until 1920–1930 after which reports have increased slightly, though now declining in eastern Canada (R.W. Suomala pers. comm.).

Early reports to 1950. First listed for New Hampshire by Belknap (1792) without comment as “Lord and Lady, or Sea Pigeon, *Anas histrionica*?,” the vernacular name still used by Thaxter (1870) who found it at the Isles of Shoals in winter. The first state specimen was 1 taken by W. Brewster at Hampton Beach in Nov 1872 (MCZ #32757) (Purdie 1873, Stearns 1887, Allen 1903). Dearborn (1903) says that it was “not rare at Hampton in winter” and that S. A. Shaw had “three or more in his collection, one being an adult male,” but he provides no other details. Forbush (1925) simply called it a “rare winter visitor coastwise in New Hampshire.”

Richards (1952a), after noting that, “All authorities agree that there has been a great reduction in [its] numbers...along the New England coast during the past,” goes on to point out that “the decline continued well after the turn of the century, since some time after that the species ceased to be regular at Hampton. Griscom (1948) describes a slight increase taking place in New England since 1940.” If such an increase was reflected along the short New Hampshire coastline, it went unrecorded from Dearborn’s (1903) report until 1 bird was found at Boar’s Head, Hampton, on 11 Jan 1948 (G.W. Cottrell). One was found inland in the Exeter River, Exeter, 12 Mar 1949 (N.L. Hatch *et al.*). The above appears to constitute the entire known record of the species in the state before 1957.

1950 to present. This duck was recorded in 16 of the winter seasons 1957–1980 and annually since 1980. Extreme early fall arrival dates are a single male present at Rye 30 Sep to 24 Nov 2007 (B. Griffith *et al.*), a female at Rye 14 Oct 1972 (J.E. Cavanagh), and 3 at Hampton Harbor 16 Oct 1993 (A. and B. Delorey). High counts are 12 at Star Island 21 Dec 2003 (J. Williams) and 11 there 18 Dec 2005 (E.J. Raynor *et al.*) on CBCs. In many seasons, Harlequins have not arrived at the coast until the January to April period. Latest known coastal spring records are 21 May 1994 at Rye (S.R. Mirick, C. Barber, P. Lacourse), 30 May 2005 (J. Taylor *et al.*), and 1 at White and Seavey Islands 3 Jun 2007 (D. and M. Hayward). The latest known spring dates at Star Island are 11 May 1969 (R.W. Smart, K.C. Elkins, D.J. Abbott *et al.*) and 5 there 10 May 2000 (R.W. Suomala).

This species winters more commonly along the coast of York County, ME, just to the north, and on the coast of Essex County, MA, just to the south (Vickery 1988) than on the short New Hampshire coast. Birds that appear there for the first time in midwinter may have come from ME, and it is suspected that birds which appear in March or April for the first time may be migrants that spent the earlier part of the winter farther south. Two recent inland records: 1 on the Nashua River at Nashua 27 Dec 1997 to 2 Jan 1998 (J. and L. Kegley *et al.*), and 1 at Littleton 1 Jan 2003 (T. MacPherson).

Surf Scoter *Melanitta perspicillata*

Status. Common spring and fall migrant and winter resident in the coastal region and at the Isles of Shoals, occasional summer straggler. Inland, an irregular fall and rare spring migrant, no summer records but 1 known winter record. Apparently declined somewhat 1800–1910 since which time only a partial recovery has occurred.

Early reports to 1950. First reported for New Hampshire by Belknap (1792) with the name “White Head Coot, *Anas spectabilis*.” Since he mentioned no other scoter species, it has been suggested that this may have been the commonest of the 3 at the time. Richards’s (1952a) excellent subsequent history follows: “The Surf Scoter’s history in the Northeast is none too clear. Forbush (1912), while suggesting that some decrease may have taken place through past heavy shooting, describes it as ‘possibly the most numerous of all the Bay and Sea Ducks which frequent the New England coast, although the White-wing is a close second.’ Phillips (1922–1926) seems to agree, reckoning...that the former was still by a little the commoner of the 2, though by about this time Forbush (1925) admitted that the two had changed places. Griscom (1948) lists the Surf Scoter as having suffered a marked decrease in 1865–1910 and having made no recovery since then. Certainly the species appears to be much less common now in MA than the White-wing, and Palmer (1949) points out that it has suffered such a decrease in ME that it is now less common there even than the Black Scoter. While the numbers in New Hampshire are insignificant compared to those reported in either ME or MA, it does seem curious that the Surf Scoter appears to have remained practically as common coastwise as the White-wing. The situation is further confused by Allen (1903, 1909), who calls the Surf and Black Scoters uncommon and the White-winged Scoter common in 1903, but all 3 equally abundant in 1909, suggesting an increase in the first 2. More likely, however, he was correcting himself. Inland at [Lake] Umbagog, Brewster (1924, pp. 182–184) considered the Surf Scoter to be about twice as common as the White-wing, but less common than the Black Scoter.”

Brewster (1924) only found Surf Scoter at Lake Umbagog

in the fall, “usually occurring commonly,” his extreme dates being 17 September to 27 October in 1871–1909. His highest count there was a flock “upwards of one hundred birds” 27 Oct 1883, predominately of this species, though it also contained some Black Scoters. Allen (1903) reports it was known to have occurred in fall at Dublin Pond (G.H. Thayer). Wright (1911) records 6 at Saco Lake in Crawford Notch 27 Sep 1905 seen by him and 1 seen there 28 Sep 1907 by R. M. Marble. White (1924b, 1937) had no records for the Concord region at all, and Dearborn (1903) had no fall inland records and only 1 report in spring, “a pair killed in Newmarket River in the spring of 1900 by Mr. Shute.” Richards (1952a) concludes: “Since the Surf Scoter is now apparently the scarcest of the three scoters in the interior of New Hampshire, its now generally recognized decrease appears to have been recognized more (there) than on the coast.”

1950 to present. Numbers noted both on salt water and in the interior remained stable until early 1970s, after which observer reports declined through the 1980s, only to rise sharply again 1990s to date.

Spring and summer. The earliest spring migrants have been suspected at the coast in the first week of March, as 173 there 4 Mar 2007 (S.R. and J. Mirick), though in many years there is no evidence of migrants until the last week of March. Peak spring flight period is usually the last 2 weeks of April and the first 2 weeks of May. Peak spring coastal counts are 300 at Hampton 11 Mar 1950 (C. deWindt *et al.*), 500 at Hampton Beach 19 Apr 1945 (S. Harris) and 340+ along the coast 9 May 1949 (T. Richards). Latest probable spring migrants were 1 at Hampton Beach 19 Jun 1950 (T. Richards), 5 at Hampton 21 Jun 1995 (S.R. Mirick), 1 at North Hampton 28 Jun 2002 (A. and B. Delorey), and 5 at Hampton 29 Jun 1997 (S.R. Mirick). An exceptional late spring report of 4500 birds of unknown species passing over Star Island 22 May 1999 (A.C. Borrer *et al.*) probably belongs here at least in part, suggesting how many scoters may pass northward out of sight of the mainland in spring.

Presumed nonbreeding summer stragglers almost annual since 2000: 5 at Hampton 22 Aug 1979 (D.W. Finch *et al.*), 2 at Rye 3 Jul 2003 (S.R. Mirick *et al.*), 3 there 12 Jul 1994 (P.D. Hunt, A. Strong), 7 at Rye Ledges 4 Jul 2000 (S.R. Mirick, J. Mathews), 1 at Rye 9 Aug 2000 (S.R. Mirick, R.W. Suomala); 1 at North Hampton 16 Aug 2001 (D.B. Donsker), 1 at Hampton 1 Jul 2004 (S.R. Mirick), 1 at Rye 24 Jul (R.W. and M. Suomala) to 15 Aug 2004 (M.G. Harvey), 2 at Hampton 9 Jul 2005 (S.R. Mirick), 1 at Hampton 1 Aug 2007 (S.R. Mirick), 1 at Rye 12 Aug 2007 (S.R. Mirick), and 1 at Rye 23 Jul 2008 (J. Woolf, S.R. Mirick).

Inland, extreme early spring arrival date is 24 Feb 1963 at Laconia (V.H. Hebert *et al.*), 11 days earlier than the next earliest report, a flock of 14 at Concord 7 Mar 1968

(J.B. Grant), the latter being the high inland spring count. The majority of spring inland records are in mid- to late May, the latest being 1 at Littleton 25 May 2000 (M. and S.B. Turner). A female straggler at Pittsburg 17 Jun 2007 (E.B. Nielsen, S. Sweet). This species was recorded inland in spring in 10 seasons 1950–1980 and irregularly since.

Fall and winter. Extreme early fall arrival at the coast is 278 migrating south 1 Oct 2006 (S.R. and J. Mirick) and 307 migrating south at Rye 3 Oct 2009 (S.R. Mirick *et al.*), and 200 were at the Isles of Shoals by 6 Oct 1968 (R.W. Smart *et al.*), though usual peak fall coastal migration period is not until the last 2 weeks of October and the first week of November. Peak counts in fall were only 500 at Hampton 13 Nov 1994 (S.R. Mirick) and 578 at Star Island 26 Oct 1970 (D.W. Finch) until 2006 when 787 were counted passing Ragged Neck in Rye 28 Oct during an easterly storm (S.R. and J. Mirick). High daily count is much lower and peak migration period is curiously later than recorded by Griscom and Snyder (1955) for MA but in much better agreement with Palmer’s (1949) data for ME.

Inland, extreme early fall arrival is a drake 20 Sep 1966 at Littleton (R.J. Bradley), and latest known inland fall reports are 1 at Concord 19 Nov 1959 (M. Dodge) and 2 at Hanover 12 Dec 1996 (D. Lacey). Inland fall records occurred in almost every year 1950–1990 and every year since. Peak fall migration period inland is the same as at the coast, but peak fall inland count since 1950 is only 50 at Littleton 14 Oct 1994 (S.B. and M. Turner). Brewster found much larger numbers in fall at Lake Umbagog on several occasions than have been found recently, but inland counts over 20 continue to be unusual.

Wintering numbers can vary from 200+ to single digits; peak midwinter count is 324 at the coast 3 Feb 2008 (S.R. Mirick). Coastal CBCs averaged 17 in the 1950s, 47 in the 1960s, 23 in the 1970s, 14 in the 1980s, 88 in the 1990s, and 139 in the 2000s. An unusual winter straggler inland was 1 at Errol 8 Jan 1967 (R.W. Smart).

White-winged Scoter *Melanitta fusca*

Status. Common to rarely abundant spring and fall migrant and winter resident at the coast and the Isles of Shoals. Occasional stragglers are found in the coastal region in summer. A regular spring and fall migrant inland though slightly less numerous in spring than fall; unknown inland in summer or winter. Was apparently common in the colonial period, declined in 1880–1910 and has since recovered.

Early reports to 1950. Belknap (1792) mentioned the “Brown Coot, *Anas fusca*,” which almost certainly belongs here. The next state records are those by Brewster (1924) at Lake Umbagog in 1871–1909. He found it a “Transient visitor in spring and autumn; appearing regularly and

not uncommonly,” his extreme dates being 23 May to 7 June and 24 September to 21 October. He found it less often in spring than in fall, his high spring count being only 7 on 30 May 1897. In fall he found it most often in the second and third weeks of October: “I cannot recall ever seeing more than twenty-five or thirty in one flock or more than fifty in the course of a single day, while the total number noted during an entire autumn might not exceed a dozen or fifteen.”

Richards (1952a) states that “Forbush (1912) has fairly good evidence indicating a decrease in numbers...in New England in about the period 1880–1910. Phillips (1922–1926) and Griscom (1948), however, do not admit any decrease.” Today it seems that if there was a decrease it was not dramatic because both Dearborn (1903) and Allen (1903) found it common in spring, fall, and winter at the coast, occasional inland, and as a straggler in summer on salt water. White (1924b, 1937) records a few birds from the Concord region. Richards (1952a) summarizes: “The recent history of the species in the State indicates a possible increase both coastwise and in the interior, with concentrations of several hundred birds and flocks of 25 to 100 being seen respectively.” The inland record alluded to of “about 100 birds” occurred at First Connecticut Lake, Pittsburg, 13 Oct 1949 (F.T. Scott, R.G. Carpenter III).

1950 to present. Some continuation of the increase through the 1970s, a modest decline in the 1980s, and an increase again in the 1990s to date. Reported inland more frequently but not in large numbers, though more often in fall than spring.

Spring and summer. The earliest suspected spring migrants were 214 at the coast 4 Mar 2007 (S.R. and J. Mirick), though the first are often not found until late March. Peak spring migration period is usually the last 3 weeks of May, peak spring counts being 2500 migrating at Newington 24 May 2008 (S.R. and J. Mirick), 690 at Rye 26 May 2005 (J.P. Smith), 551 at White and Seavey Islands 28 May 2003 (M. Barney *et al.*), and 519 at Rye 29 May 2005 (S.R. Mirick *et al.*). An exceptional count of 5170 seen from the coast migrating 24 May 2004 (S.R. Mirick) accompanied an unusual inland fallout of birds the same day and for 3 days afterward. Most of a count of 4500 scoters seen migrating at the Isles of Shoals 22 May 1999 (S.R. Mirick, A.C. Borrer) were believed to be this species. Latest coastal migrants in spring were a flock of 34 at Hampton 2 Jun 1968 (H.C. Anderson).

Extreme early inland spring record is 1 at Hopkinton 14 Apr 1968 (M.N. Dodge) and latest since 1950 is 2 at Chesterfield 26 May 1961 (T. Richards), both earlier than Brewster’s extreme dates at Lake Umbagog. The majority of inland spring records are in the second and third weeks of May. Highest inland spring counts are 500 at Sandwich 25 May 2004 (A.J. Vazzano), 200 at Squam

Lake 21 May 2011 (T. Grade), 180 at Littleton 22 May 2002 (R.J. Bradley) and 150 at Lake Sunapee 22 May 1994 (J. Quackenbos), but records exceeding 20 birds are unusual. An exceptional fallout of 922 birds was reported 24–27 May 2004 (v.o.) at 7 different locations in both the Merrimack and Connecticut River valleys from Surry in the south to Jefferson in the north. Another rain-induced fallout of 835 birds occurred in the Littleton–Pittsburg area 21 May 2006 (S.B. and M. Turner, M.G. Harvey). The latest inland spring report is 1 at Second Lake, Pittsburg, 22 Jun 1955 (M. Halberg *et al.*).

Late spring migrants or stragglers were at Jeffreys Ledge 11 Jun 1978 (D.J. Abbott *et al.*), 5–6 were at Hampton 21 Jun to 3 Jul 1995 (S.R. Mirick *et al.*), 14 at North Hampton 24 Jun 2002 (A. and B. Delorey), and 5–12 were along the coast 5 Jun to 14 Jul 2001 (S.R. Mirick *et al.*). Stragglers occur occasionally in summer along the coast, having been noted in 5 summers 1963–1980 and annually since 2000. Selected reports are 2 at Hampton 30 Jun 1968 (H.C. Anderson), a flock of 8–14 in the Hampton–Rye area 28 Jun to 16 Jul 1967 (L.G. and E.W. Phinney *et al.*), 2 at North Hampton 7 Aug 1966 (R.W. Smart); 6 at Rye 20 Aug 1960 (R.R. Rathbone), 2–4 at Rye 12 Jun to 31 Jul 1994 (S.R. Mirick, P.D. Hunt, A. Delorey *et al.*), 7 at Hampton 28 Jul 1996 (S.R. Mirick), 1 at Rye 1 Aug 2001 (D.B. and T. Donsker), 9 at Rye 6 Jul 2003 (R.W. and M. Suomala) and 8 still there 31 Jul 2003 (S.R. Mirick), 1 at White and Seavey Islands 5 Jul 2004 (M. Barney *et al.*), 2 at the coast 18 Jul 2004 (J.P. Smith *et al.*), 5 at Rye 15 Aug 2004 (M.G. Harvey), 2–3 at the coast 9–31 Jul 2005 (S.R. Mirick *et al.*) and 2 there 6 Jul 2006 (S.R. Mirick), 3 at Hampton 1 Aug 2007 (S.R. Mirick) and 4 there 16 Aug 2007 (E.A. Masterson), 8 at Rye 29 Jun to 23 Jul 2008 (S.R. Mirick), 8 at North Hampton 1 Aug 2009 (T. Pirro, C. Caron), 3 on the inshore banks 3 Aug 2009 (M.G. Harvey), and 7 at the coast 20 Aug 2002 (M. Suomala).

Fall and winter. Extreme early fall arrival is obscured by the regular presence of summering birds but general fall arrival is not usually until the first week of October. Peak migration period in the fall is typically the last 2 weeks of October and the first 2 weeks of November, though arrival in large numbers may not be until later or, rarely, earlier. Highest known coastal fall counts are 470 at Rye 4 Oct 2003 and 500 there 7 Oct 2007 (both S.R. Mirick). The majority of fall migration is believed to be offshore; New Hampshire only gets a trace of the flocks of thousands of birds regularly found migrating and wintering in MA. Coastal numbers typically taper off by late December. The mean number found on coastal CBCs was 107 in the 1950s, 194 in the 1960s, 312 in the 1970s, 136 in the 1980s, 331 in the 1990s, and 180 in the 2000s. Maximum counts are occasionally in the 200+ range.

Since 1950, extreme inland fall dates have been 1 Sep 1957 at Gilford (Davis *et al.*) to 31 Dec 1994 at Laconia

(CBC). Peak inland fall counts since 1950 are 60 at Littleton 11 Oct 1962 (H.C. McDade), 45 at Franconia 9 Oct 2005 (O. Ruiz), and 35 at Chesterfield 20 Oct 1960 (T. Richards); counts over 25 are unusual. As these maxima suggest, the peak fall inland migration period is unchanged since Brewster's day. The only known inland winter record is 1 at Laconia 17–23 Feb 1975 (V.H. Hebert *et al.*).

Black Scoter *Melanitta americana*

Status. Regular spring and fall migrant in the coastal region and at the Isles of Shoals, though much more common in spring than in fall; it is uncommon there in winter and rare as a summer straggler along the coast. Inland it is occasional in spring, known once in summer, unknown in winter, and regular in fall in moderate numbers, sometimes in flocks. Its early history is unclear, but it appears to have declined from the mid-1800s to 1910–1920, since when it has partially recovered.

Early reports to 1950. The “Black Duck Coot, *Anas nigra*,” of Belknap (1792) most probably belongs here. Forbush (1912) believed that this species declined in the late 1800s due to excessive hunting, though the evidence in support of this opinion is slender and other authorities such as Griscom (1948) did not agree with him. Dearborn (1903) described it as common in September and October and again in spring on Great Bay and the ocean, but he did not list it as present in winter. Allen (1903) considered it “uncommon” in spring and fall at the coast and also present in winter, but as Richards (1952a) points out, it probably was no more common there then than it is today, though “With the elimination of winter and spring shooting it is possible that the Black Scoter has gradually increased a little coastwise.”

Brewster (1924) documents the status of this species at Lake Umbagog in 1871–1909 in detail. His extreme fall dates there were 4 September to 30 October, the peak migration period being the last 3 weeks of October. As for relative abundance, he saw “at least ten Black Scoters for every Surf Scoter, and perhaps 2 Surf Scoters for every White-winged Scoter.” As for absolute numbers, “It was by no means unusual to note upwards of one hundred...in a single flock, and occasionally as many as five or six hundred might appear together. The glossy old males were most numerous early in the season, the brown females and young after it was well advanced.” His maximum count was “at least” 1000 in sight at once 30 Oct 1889. He knew of no spring records for the lake. Other contemporary writers had hardly any inland records except occasional October reports of single individuals or flocks of 10 or fewer birds. The only exception seems to be a flock of about 100 reported by Thayer (1904, 1912) 12 Oct 1904 at Dublin Pond, a locality where flocks appeared in fall with some regularity.

Since Brewster's time, inland reports are very few. The first known inland spring record was a drake on the Connecticut River near Westmoreland 7 Apr 1935 (Shelley 1936b) and the next was 6 birds on Squam Lake 30 May 1947 (H. Coolidge). The only known inland summer record is of 2 at New Hampton 24 Jul 1945 (V.H. Hebert).

1950 to present. Overall, a modest increase seems to have occurred, especially inland, though general numbers were higher in the 1970s than for the next 2 decades.

Spring. The first spring migrants are sometimes suspected by the second week of March, extreme dates being suspect because of wintering birds. Peak coastal migration period is the month of April. Peak coastal spring counts are 146 on 5 Apr 2008 (S.R. and J. Mirick) and 150 on 9 Apr 1972 (V.H. Hebert), and latest presumed migrants were a pair at Rye 1 Jun 1966 (L.G. and E.W. Phinney). Unusually late migrants or summer stragglers were 4 in North Hampton and Rye 20 Jun 1998 (S.R. Mirick), 1 at Rye 25 Jun 2000 (S.R. Mirick), and 2 at North Hampton 28 Jun 2002 (A. and B. Delorey).

Inland, this species was reported in 10 springs between 1950–1980 and occasionally since. Extreme dates inland in spring have been from 1 at Hinsdale 28 Mar 2009 (E.A. Masterson) to 11 Jun 1978 when 11 were at Lake Umbagog (J.H.V. Fisher, K.E. Folsom). High inland spring count is 100 at Gilmanton 13 May 2003 (W. Arms).

Summer. Allen (1903) cited William Brewster as authority for presumably barren birds summering along the coast. Richards (1952a) had no such records, and there are not many known since, though the species has become almost annual since 2000: 1 at Rye 30 Jun 1970 (D.J. Abbott), 1 there 2 Jul 1995 (S.R. Mirick, N. Pease), 6 at Hampton 7 Aug 1999 (A. and B. Delorey), 3 at Rye 3 Aug 2000 (J. Williams), 1–3 at White and Seavey Islands 2 Jun to 28 Jul 2001 (D. Hayward *et al.*), 1 at North Hampton 30 Aug 2002 (S.R. Mirick), 2 at Seavey Island 13 Jul 2004 (E.A. Masterson), 1–2 at Rye 5–13 Aug 2004 (M.G. Harvey, S.R. Mirick), 3 at Hampton 16 Jul 2005 (S.R. Mirick *et al.*), 7 at Hampton 1 Aug 2007 (S.R. Mirick), 7 at Rye 19 Aug 2007 (S.R. Mirick), 1 at Rye 23–29 Jun 2008 (B. Griffith *et al.*), and 2 at Rye 14 Aug 2010 (S.R. Mirick).

Fall and winter. Earliest known coastal fall arrival is 12 Sep 1966 (R.W. Lawrence) when 13 were at Star Island. Peak fall coastal migration period is the last 3 weeks of October, usually singles, pairs, or small flocks rarely exceeding 10 birds. The highest known fall coastal count is 170 on 4 Nov 1975 (S.A. Fogleman) other than at least 4820 seen off Ragged Neck in Rye 28 Oct 2006 (S.R. and J. Mirick) during an easterly storm; the same day another 2220 “dark-winged” scoters were seen there too far away for positive identification. These reports increase the suspicion that in most years a very large offshore flight occurs since thousands are found farther south in MA in November (Griscom and Snyder 1955); more work at the

Isles of Shoals at this season is needed. From late October, numbers typically taper off by the end of December. The mean number found on the Coastal CBC was 4 in the 1950s, 24 in the 1960s, 94 in the 1970s, 23 in the 1980s, 29 in the 1990s, and 44 in the 2000s. Numbers that winter at the coast can vary from only a handful to several dozen, and by mid-February often only 10–20 remain; exceptions are 76 at Hampton 13 Feb 1999 (A. and B. De-lorey) and 158 at the coast 3 Feb 2008 (S.R. Mirick).

Inland this species is usually more frequent and much more numerous in fall migration than in spring. Earliest known arrival date is 1 at Chesterfield 24 Aug 1954 (T. Richards), a week earlier than the next inland report and nearly 3 weeks earlier than the first coastal arrival. Peak fall migration period inland is the last 3 weeks of October, the same as observed by Brewster (1924) at Lake Umbagog. Peak inland counts since 1950 are 600 at Chesterfield 11 Oct 1957 (T. Richards) and 600 at Littleton 27 Oct 2004 (R.J. Bradley), occasional counts ranging up to 300–400. Particularly heavy fall flight years were 1960, 1963, 1971, 1972, 1976, 1980, 1995, 2007, and 2008; in most cases the birds were put down by storms and were gone the next day. Latest known inland fall record is 1 at Chesterfield 12 Dec 1955 (T. Richards). There are no known inland winter reports.

Taxonomic note. Recently split from the Common Scoter *M. nigra* of Europe (AOU 2010)

Labrador Duck *Camptorhynchus labradorius*

Status. Hypothetical. Extinct. To quote Palmer's (1949) comment for ME, which applies equally well for New Hampshire, there is "...no certain record of this bird, which has been extinct since about 1878, but there can be no reasonable doubt that it formerly visited our coast." Goodhue (1922) felt certain that it had formerly occurred along the coast though he knew of no specific records. Though neither Forbush (1929) nor Greenway (1958) had any specific New Hampshire records, both mention that it was a regular spring and fall migrant and occasional winter resident along the New England coast. Phillips (1922–1926) says of it: "...so far as we know, the bird was more common on the New England coasts in winter than elsewhere..." The nearest point at which it was definitely recorded is the mouth of the Plum Island River, MA, about 13 miles south of the New Hampshire state line. A specimen was collected there in 1844 and, according to Townsend (1905), the species may possibly have been observed there by C. J. Maynard about 1872. It seems inconceivable that this species could have reached this point without coming into what is now considered New Hampshire waters, either along the mainland coast, or more likely, at the Isles of Shoals.

Long-tailed Duck *Clangula hyemalis*

Status. Common spring and fall migrant and winter resident in the coastal region and at the Isles of Shoals. An uncommon fall migrant inland but an irregular migrant there in spring. Declined sharply in the 1850–1900 period but has recovered equally sharply since the 1920s, possibly to its former abundance.

Early reports to 1950. First reported for the state by Belknap (1792) as "Oldwife, *Anas hyemalis*," on the authority of a Mr. Peck. Next recorded for the Isles of Shoals in winter by C. Thaxter (1870). Dearborn (1898) only knew of 1 inland record in the Webster area *fide* C. F. Goodhue but had no details, and Dearborn (1903) recorded it as a spring and fall migrant at the coast but apparently absent in winter and "...greatly decreased in numbers within the last fifty years." Allen (1903) considered it a "common spring and fall migrant and winter resident along the coast and occasional also inland," especially in the Connecticut River valley. He cites a pair taken at Marlow 24 Apr 1883 which were still in the Acworth–Silsbury Free Public Library collection in 1972, mentions that it was "...an irregular fall visitant to Dublin Pond, sometimes occurring in large flocks" *fide* G. H. Thayer, and quotes C. F. Goodhue as authority for "...two taken in late November, about 1891, on the Winnepesaukee River, between Franklin Falls and Tilton." Wright (1911) records a pair shot on the Lancaster meadows 17 Apr 1909 (MCZ #330430), by F. B. Spaulding who also saw 1 which was shot on the Connecticut River at South Lancaster a few years before 1911.

Brewster (1924) found it "not uncommon" at Lake Umbagog but was careful to state that "it must not be inferred...that Old Squaws were ever met with frequently, even at the height of the autumnal migration;...it was unusual to note them more than once or twice in the course of a...season." His extreme dates there were 17–27 October in 1871–1909; the largest flock he mentions is 9 birds 23 Oct 1885. He knew of only 1 record for the lake in spring, 1 bird out of 3 seen having been collected in May 1887, but the state in which they were found was not known to him so they may not have been in New Hampshire.

White (1924b, 1937) had no records at all for the Concord region. Richards (1952a) points out that there now seems "little doubt" that this species declined sharply in the late 1800s at the coast due to hunting and "reduction of the breeding range along the Labrador coast following the depredations of down and egg hunters." He mentions that this same decline is suggested by both Forbush (1912) and Dearborn (1903) and is supported by Palmer's (1949) data for ME. Following the abolition of winter and spring shooting, the species must have increased sharply along the New Hampshire coast as Palmer (1949) said that it did in ME. A summer straggler

or possible extreme early migrant was 1 at Rye 19 Aug 1948 (V.H. Hebert). The first known inland record in late fall/winter was 1 at Laconia 3 Nov to 2 Dec 1949 (T. Richards).

1950 to present. Numbers have varied from year to year but have remained relatively stable overall.

Spring and summer. Spring migration usually begins by mid-March in the coastal region, the earliest suspected migrants being 64 at the coast 4 Mar 2007 (S.R. and J. Mirick). Peak spring coastal migration is the last 2 weeks of April and the first week of May. High spring coastal count is 563 on 2 May 2009 (S.R. and J. Mirick) and late spring dates on salt water are 1–4 at Rye 1–4 Jun 1996 (S.R. Mirick, P.D. Hunt *et al.*), 2 at Rye 6 Jun 2000 (A. and B. Delorey), and very late spring migrants or summer stragglers were a hen at Hampton Beach 19 Jun 1950 (*fide* T. Richards), 1 at Hampton 19 Jun 2004 (S.R. Mirick), 1–2 at Hampton 20–26 Jun 1998 (S.R. Mirick), 1 at North Hampton 30 Jun to 7 Jul 2001 (S.R. Mirick), and 2 at Rye Ledge 6 Jul 2009 (S.R. and J. Mirick). A straggler or extreme early fall migrant was at New Castle 9 Aug 2009 (S.R. Mirick *et al.*).

Inland spring reports are less frequent than in fall; birds were noted in 68% of springs 1950–1980. Extreme early dates have been 1 at Hinsdale 3 Mar 2003 (A. Merritt) and 5 at Hanover 25 Mar 1975 (T. Bickel) to late dates of 4 at Littleton 22 May 2000, 8 there 22 May 2002 (both R.J. Bradley), and 1 at Errol 1 Jun 2006 (C.J. Martin), the heaviest concentration of reports being in the last week of April and the first week of May. Peak inland spring count is 22 at Littleton 7 May 1972 (R.J. Bradley).

Fall and winter. Extreme early fall coastal arrival or a summering bird is a female at Hampton 24 Aug 1967 (R.W. Smart), the next earliest being 1 at Rye 12 Sep 2009 (C. Lapierre, J. Trimble) and 1 there 20 Sep 1950 (T. Richards), though otherwise reports are very scarce until mid- to late October. Peak coastal migration is typically the month of November, though this species may not arrive in numbers until January in some years. Peak fall coastal count is 302 migrating south at North Hampton 6 Nov 2007 (S.R. Mirick). Some always winter at the coast and at the Isles of Shoals. Mean numbers found on coastal CBCs have been 42 in the 1950s, 71 in the 1960s, 131 in the 1970s, 71 in the 1980s, 93 in the 1990s, and 115 in the 2000s. Some winters large numbers of this species are found off York Ledge, ME, which occasionally move over the state line into New Hampshire waters.

Since 1950, extreme inland dates have been 1 at Charlestown 16 Sep 1975 (W.W. Kidder) to 1 at Laconia 29 Dec 2007 (P.D. Hunt) on a CBC. Peak inland fall count is 50+ at Pittsburg 11 Nov 1963 (F.T. Scott); the majority of inland fall reports are from the Connecticut River valley; peak migratory period averages about a week earlier than at the coast. An unusual 7 inland fall records in 2008

(v.o.) and 4 in 2009 (v.o.). It has been reported inland at least once in fall over 80% of years 1950–2009. The only known inland winter record later than December is 1 at Hinsdale 10 Jan 2005 (E.A. Masterson).

Bufflehead *Bucephala albeola*

Status. Common spring and fall migrant and common winter resident in the coastal region. Moderately common spring and fall migrant and occasional winter resident in the interior. A few summer stragglers have been recorded but breeding is unconfirmed. Following a sharp decline in the late 1800s it has increased greatly, especially since the 1930s.

Early reports to 1950. First mentioned for the state by Belknap (1792) as the “Dipper, *Anas albeola*,” a vernacular name still in use over 200 years later. Brewster (1924) found it a “Transient visitor, rare in spring, not uncommon in autumn” at Lake Umbagog. His earliest fall date was 4 October but his latest, 27 October, was admittedly unrepresentative since he never remained at the lake past 2 November in 1871–1909. He never saw more than 4–5 in a day or more than 12 in a fall season at the lake. His spring records are more interesting. He notes 1 shot by someone else in early May 1880 which he later examined, but he did not know in which state it was taken. On 1 Jun 1880 he saw a pair near the mouth of the Cambridge River, which was then in New Hampshire, and a single drake the same day in New Hampshire on “the Megalloway River a few miles above where it unites with the Androscoggin.” A search failed to find a nest near either place, but he says (1924): “I am still inclined to believe that they must have bred somewhere near the mouth of the Cambridge, and that the other drake may have also had a mate and a nest, perhaps in the bottomlands of the lower Megalloway.” Aside from the very doubtful record mentioned below, this is the only known possible breeding record for New Hampshire.

Dearborn (1898) suggests that it was rare inland in Belknap and Merrimack Counties at that time and later (1903) called it a “frequent” visitor to the coastal region in winter from October to April. Allen (1903) considered it uncommon in spring and fall at the coast and only occasional inland; he (1909) did not even suggest that it occurred in winter until later. Richards (1952a) says: “the Bufflehead was not a common bird even coastwise fifty years ago. As Forbush (1912), Griscom (1948), and Palmer (1949) point out, a great decrease had occurred during the period of market hunting [in the late 1800s]. The last two named, however, also describe a great recovery in the period since 1930. This soon became noticeable in coastal New Hampshire...and the trend seems to have continued.”

Mr. Herbert Drake of Rye reported finding 2 adults with

4 young on Great Bay 11 Jun 1946, a record never verified and doubted by both Richards (1952a) and the present authors.

1950 to present. Slight increase, especially inland.

Spring. The earliest certain spring migrants in the interior appear by the second or third week of March, earliest probable migrants near the coast being 6 at Kingston 3 Mar 1998 (J. Romano) and 1 inland at Tilton 1 Mar 2003 (P.D. Hunt). Migration typically peaks in the first 2 weeks of April, both at the coast and inland. High spring counts are 184 at the coast 2 Apr 1965 (D. Gallup *et al.*) and 110 inland at Lake Massabesic, Auburn, 23 Apr 1996 (G. Mitchell). The total number of spring inland records in some years exceeds the total number of birds seen along the coast and the reports often come from bodies of water all over the state. Latest spring records are a pair at Franklin 25 May 1957 (K.C. Elkins) and a likely non-breeding drake at Dover 5 Jun 1980 (R.A. Quinn).

Summer. Five reports of presumed nonbreeding stragglers: 1 hen at Exeter 25 Jun 1967 (L.G. Phinney *et al.*); 1 drake at Lake Chocorua 4–11 Jul 1964 (E. Steele); a female at Dummer 7 Jul 1972 (R.W. Smart, G.S. Keith); a female at Errol 7 Jul 1973 (F. Yates *et al.*); 1 at Rochester 14 Aug 2006 (T. Bronson *et al.*); 1 at Livermore 17 and 23 Aug 1964 (H.C. McDade *et al.*); and 2 at Rochester 24 Aug 2005 (S.R. Mirick), the latter 2 reports possibly of extreme early migrants.

Fall and winter. Since 1950, earliest known fall arrival is 3 at Concord 21 Sep 1966 (N.B. Struckhoff) though usual arrival is not until mid-October. Peak fall migration period is the last week of October and the first 2 weeks of November, both at the coast and inland. Peak fall count is 2465 at Great Bay 11 Nov 1952 (R.W. Smart), a number totally without precedent and suggesting an exceptional flight year. The next highest known count is 468 at Great Bay 2 Nov 1950 (T. Richards), and daily totals over 250 are unusual. At inland localities in the fall, counts up to 15 are routine, and the highest such count is 60 at Center Harbor 4 Dec 1959 (J.P. Merrill). As noted by Richards (1952a), it is more common inland in fall than in spring. Nearly all migrants have gone from the interior by late November and from the coast by mid-December, but some always winter at the coast, their numbers varying from a few dozen to several hundred. The Coastal CBC averaged 45 in the 1950s, 97 in the 1960s, 115 in the 1970s, 85 in the 1980s, 96 in the 1990s, and 82 in the 2000s. The coastal winter waterfowl survey has shown a significant drop from a yearly mean of 227 in 1952–1959 to only 27 in 2000–2009 (E.G. Robinson at NHFG pers. comm.).

The first known true inland winter record was 1 found at Laconia 22 Dec 1947 (T. Richards). Since then it has been found occasionally from late December even to late February near the southern ends of the 2 major river val-

leys. Four to 6 wintered at Tilton in the 1957–1958 season, and 1–5 were found there at least into January of 1954, 1963, 1968, 1970, and 1971, and rarely since.

Common Goldeneye *Bucephala clangula*

Status. Common to very common spring and fall migrant statewide; common winter resident on salt water and locally on unfrozen larger inland lakes and rivers; a regular summer resident and breeder from the White Mountains northward. Its status seems to have varied relatively little in the last 200 years though it may have decreased slightly as a summer resident.

Early reports to 1950. Belknap listed the “Whistler, *Anas clangula*,” the first state record, employing a vernacular name still in use today. Brewster (1900, 1924) first described its nesting in the state at Lake Umbagog, though it doubtless nested there well before his first visit in 1871 (Samuels 1867). Brewster described it as a “very common summer resident” and records clutches of its eggs mixed with those of both Hooded Merganser and Wood Duck. He noted no appreciable decrease during 1871–1909. Both Dearborn (1898, 1903) and Allen (1903) list it as common in migration both at the coast and in the interior and as a common breeder in the north. Allen (1903) also mentions an unusual record of 1 collected at Charlestown 13 Jun 1885 which is still in the Acworth–Silsby Free Public Library collection. Wright (1911) found it nesting at Weed’s Pond, Whitefield, 23 Jun 1905, and again there in 1906, 1908, and 1909. C. H. Rogers (1902–1919) established what was then the southernmost known breeding record at Franconia Notch in 1908 and the same year found it nesting at both Big Diamond Pond and the Connecticut Lakes.

Curiously, White (1924b, 1937) considered it uncommon and an “irregular visitant” in the Concord region. But Richards (1952a) summarizes nicely: “Although Forbush (1912) is apparently the only authority who believed that the Goldeneye’s overall numbers decreased during the period of market hunting, he has rather convincing evidence...Nevertheless, the number held up well enough so that the species never got noticeably scarce anywhere in New Hampshire...Mr. Henry M. Hall has informed me that he found what he believed to be a Goldeneye brood at Newfound Lake [in about 1905–1909]. The only apparent change in the Goldeneye’s recent history in New Hampshire is a slight [withdrawal] of its breeding range [northward].”

Even by the late 1930s and early 1940s, this species was a common spring and fall migrant in the interior, wintering regularly and in good numbers on lakes and rivers where the water remained unfrozen, particularly near Laconia and Tilton. Examples are 100 at Laconia 14 Feb 1947 (T. Richards), 150 at Lake Winnisquam 3 Jan 1948

(T. Richards), and 250 at Pittsburg 8 Feb 1950 (T. Richards). Birds wintering at these localities usually began to arrive in mid-October and their numbers built up rapidly during the following 3–5 weeks. In milder seasons, most birds remained until mid-March when the first migrants began to leave. Occasional birds also lingered well south of breeding areas into late spring and early summer. Examples are the 1885 specimen from Charlestown mentioned above, 1 at Rye Harbor 26 Jun 1939 (C. Robbins *et al.*), 1 at Squam Lake 20 Jun 1945 (T. Richards), 1 at Plymouth 13 Jun 1947 (T. Richards), and a female at Andover 29 Jun to 6 Jul 1947 (K.C. Elkins).

1950 to present. Slight increase in general abundance.

Spring. Extreme migration dates are obscured by the presence of birds all year, but the first spring migrants are suspected by the last week of February at the coast. Peak spring migration period both inland and at the coast is typically the last week of March and the first 2 weeks of April. Peak counts mean little for a species that usually does not occur in large flocks, but counts of 250 a day along the coast and up to 100 at favored inland localities occur occasionally at the height of spring migration. Peak counts are 600 at the coast 23 Mar 1963 (R.W. Lawrence *et al.*), 250 inland at Hinsdale 1 Feb 2009, and 198 there 6 Mar 2009 (both E.A. Masterson). Northward movement of migrants is usually over by the second week of May, latest dates obscured by occasional stragglers that remain south of known breeding areas. Examples of such birds are a pair at Hampton/Seabrook Harbor 18–19 Jun 1953 (T. Richards), and 1 at North Hampton 21 Jun 1967 (L.G. Phinney *et al.*). Inland, such records include 1 at Cheshire Pond, Jaffrey, 14 Jun 1974 (B.H. MacDonald).

Summer and breeding. This species' breeding range in New Hampshire is restricted to Coos County (Richards 1952a, 1972–1973; Lee 1953; Foss 1994). Richards (1952a) writes: "The Whistler's present breeding range, so far as it is known, extends from Nash Bog Pond, Stratford, and Pontook Reservoir, Dummer, north to Pittsburg. One or two or more broods can be found on many of the small to medium-sized ponds in this area, but broods do not usually frequent the larger lakes until the young birds are nearly or quite full grown. Goldeneyes breed most commonly in the Lake Umbagog area, especially along the Magalloway and Androscoggin Rivers above the Errol Dam...Broods hatch in late May or early June." The earliest hatched young noted at Lake Umbagog by Brewster (1924) were found 7 Jun 1897. Foss (1994) reports 7 confirmed breeding sites in 1981–1986 and fledged young recorded 13 June to 3 August; a female and 11 young were at Wentworth's Location 8 Jun 2000 (R.A. Quinn). Breeding numbers may be declining (*fide* T. Richards).

Occasional presumed nonbreeding summer stragglers have been found south of the breeding range. Examples

are a hen at Laconia 2 Jul 1968 (H.C. Anderson), 1 bird at Monroe 9–20 Jul 1967 (L.E. Cole), 1 at New Castle 22 Jul 1966 (L.G. and E.W. Phinney), 1 at North Hampton 8 Aug 1964 (V.S. Wright *et al.*), 1 at Exeter 1 Aug 1972 (D.J. Abbott), singles at Rye 12 Jun 1993 and 13 Jul 1996 (both S.R. Mirick), and 1 at Hampton 3–6 Aug 2005 (S.R. Mirick *et al.*).

Fall and winter. The earliest suspected migrant to have appeared south of the White Mountains was 1 at Tamworth 3 Sep 1971 (R.E. Ritz). Fall migration usually peaks in the last week of October and the first 2 weeks of November, though seasons vary considerably. As noted by Richards (1952a), the birds assemble into flocks on the breeding grounds well before they start south, and they tend to linger inland as long as they can which is presumably the reason large numbers are often not found in the coastal region until late November or even December. High fall and early winter count at the coast is 996 on 27 Dec 1958 (CBC) and inland is 337 at Laconia 27 Dec 1952 (CBC) and 229 there 2 Jan 1993 (CBC). Single birds, small groups, and sometimes flocks up to 50 or more regularly winter in the interior almost anywhere there is enough open water, a few always surviving at favored locations such as the Merrimack River at Manchester and Concord, even north of the White Mountains at Errol and Lake Umbagog. In the coastal region it is usually one of the commonest and most widely distributed duck species in winter. Mean numbers found on the Coastal CBC were 469 in the 1950s, 602 in the 1960s, 468 in the 1970s, 461 in the 1980s, 314 in the 1990s, and 338 in the 2000s. The coastal winter waterfowl survey has shown a marked decline from a mean of 565 per year 1952–1959 to only 60 in 2000–2009 (E.G. Robinson at NHFG pers. comm.).

Taxonomic note. See Appendix I for reports of presumed hybrids between this species and both Hooded Merganser and Barrow's Goldeneye.

Barrow's Goldeneye *Bucephala islandica*

Status. Regular winter visitor in very small numbers, recorded every year at least since 1949, chiefly at coastal localities since 1990. Formerly considered only a straggler, but possibly more overlooked than rare in the past.

Early reports to 1950. The first state record appears to be a drake shot at Little Bay about 1900 by George F. Wentworth and shown to Dearborn (1903). One was taken at Dover at a date now lost as recorded by Goodhue (1922). One was seen in Little Bay near Portsmouth in 1909 (*fide* G.M. Allen), and 4 spent the winter of 1918–1919 in the Connecticut River at Woodsville (Smith 1921). The next available report is 2 at Pittsburg in Jan 1940 (F.L. Scott, R.M. Carpenter), a locality where it has since become occasional. One was found at Rye 27 Mar 1940 (H.

Coolidge), and 1 was at West Lebanon 23 Mar 1941 (L. Forsyth *et al.*). The first known winter record for Lake Winnisquam is 9 Jan 1943 (E. Kendrick, E. McCrillis) and 3 appeared in Laconia 22 Jan 1943 (S.G. Emilio). It was recorded, typically in numbers of 1–4, at 1 or both of those places nearly every winter through the 1960s, as well as at occasional areas of open water on both the Connecticut and Merrimack Rivers and at both Errol and Pittsburg. One was at Hampton Beach 19 Feb 1949 (N.L. Hatch).

1950 to present. While occasionally found on salt water around Great Bay and along the coast, 85% of the 138 birds reported 1950–1980 were found on interior lakes and rivers; in 1981–2009 the percentage has dropped to under 50%, probably due to more intense field work along the coast. Extreme early fall arrival was an adult drake at Laconia 24 Oct 1970 (H.C. Anderson *et al.*), and latest known in spring is 1 at Errol 4 May 1991 (D., B., and H. Killam). While seasons vary, fall arrival is not usually until late November, and in some years the first birds do not arrive until January. The number that appears in a given winter season also varies. While at least 1 has been found in every winter since 1950, the high counts of individuals in a single winter were 16 in the 1964–1965 season and 14 in the 2004–2005 season. A hen was at Errol 15 Feb 2000 and a drake was there 19 Apr 2000 (both R.A. Quinn). Occasionally there is an increase in reports in the first 3 weeks of March that suggests some north-bound migration which parallels the species' movements in ME (Palmer 1949). Highest count in a day is 6 on 2 occasions: on the Connecticut River in Cheshire County 28 Dec 1950 (S.A. Eliot, Jr.) and at Errol 7 Mar 1965 (R.W. Smart *et al.*).

Taxonomic note. See Appendix I for reports of presumed hybrids between Barrow's and Common Goldeneyes.

Hooded Merganser *Lophodytes cucullatus*

Status. Regular and common spring and fall migrant, especially in the northern half of the state. Breeds nearly statewide but more commonly from the White Mountains southward and less commonly in the northern third of the state. Regular but local and uncommon winter resident. Probably common to abundant in precolonial and early colonial times, declining both as a migrant and as a breeder 1750–1910, especially in the 1870–1900 period. Began to increase in the 1930s and increased rapidly from the 1940s to about 1960 since when its numbers have been stable to slightly higher.

Early reports to 1950. First recorded for the state by Belknap (1792) who called it the “Pyed Shelldrake, *Mergus castor*?” Richards's (1952a) account of the species's history follows: Its “natural breeding range...is a rather southerly one, being mostly confined to the United

States, at least in the east. Presumably the Hooded Merganser nested commonly if not abundantly throughout most of this range, including southern New Hampshire, before the forests were largely cleared for agriculture [in 1700–1850], as Forbush (1912, 1925) has suggested. With the removal of the forests, however, the species...for the most part disappeared and became confined to the few remaining densely forested areas such as northern New Hampshire. While a few birds probably nested locally in southern and central New England until they were wiped out by the indiscriminate, uncontrolled shooting of the nineteenth century; the elimination of the Hooded Merganser as a breeding bird from this area had probably...been accomplished early in the same century or late in the previous one.”

As Richards (*in* Foss 1994) notes, this species was “[p]robably once common in beaver ponds of New Hampshire's virgin forests [but] declined greatly...as forests were cleared, beaver ponds disappeared and uncontrolled hunting increased.” The best early data on this species in the state are those of Brewster (1924) at Lake Umbagog in 1871–1909. Maynard (1871) had recorded it as nesting “not uncommonly” there, but Brewster (1924) found it an “abundant” spring and fall migrant and summer resident there when he first arrived, and commoner than the American Black Duck, Wood Duck, or Common Goldeneye as a breeder. He notes that largely due to the slaughter wreaked by 1 “gang of vandals,” it had become very scarce there by 1890 and had become the least numerous duck species breeding there. He continues: “now it is well-nigh locally extinct. Elsewhere throughout its summer range in New England there has been a corresponding...decrease due in part, without question, to excessive shooting, although other and more obscure causes must have contributed to it.” Brewster only recorded the species a few times from 1890 to 1900 and only once after 1900, this in comparison to flocks of up to 200 birds in New Hampshire at Leonard's Pond near the outlet of the lake in the early 1870s at the end of August.

Richards (1952a) continues: “Elsewhere in New Hampshire in the late nineteenth century the Hooded Merganser was apparently unknown as a nesting bird. It did not become exterminated as a migrant, however...Allen (1903) called it an uncommon migrant as a whole and a summer resident in the north, but referred only to Umbagog. In 1909 he considered it rare. Dearborn (1898) described the Hooded Merganser as occurring ‘singly or in pairs with considerable regularity’ in Belknap and Merrimack Counties and (1903) as ‘not uncommon visitors to Great Bay and its tributaries in late fall and early spring.’ Wright (1911) never saw it at the Cherry Ponds and cited spring and fall records only for Lancaster. Phillips (1922–26) described a great reduction of the

species in the past, saying that it had probably gone as a breeding bird from New Hampshire...The great change in the status of the Hooded Merganser in New England began, or at least became noticeable, in the period 1930–1940, a slight increase occurring, which continued in the next decade...[This] slight increase...was not at first noticeable in New Hampshire. White (1924b, 1937) apparently never saw the species in Concord, [had only 1 recent record, and] considered it rare. According to Griscom (1938), Mr. G.L. Perry, who made [8 short] visits to Lake Umbagog from 1930 to 1936, did not find any Hooded Mergansers there...Provost (1942)...in the summer of 1940 made a waterfowl reconnaissance of this section and also saw [none].”

Richards (1952a) details the comeback of the species in New Hampshire in the 1940s: the first birds found wintering at Laconia in 1941, the first breeding since Brewster’s time in the Lake Umbagog region in 1944, the first southern breeding record at Andover in 1942 (K.C. Elkins), locally-raised birds at New Hampton 11 Aug 1944 (V.H. Hebert), the first modern breeding record at Exeter about the same time (N.L. Hatch), and the species establishing itself as common in summer at Pittsburg in the same period (F.T. Scott). By 1948, at least 12 breeding pairs were known, and concentrations of migrants were noted. In 1949, at least 37 broods were known, of which 14 were in the Lake Umbagog–Pittsburg area alone, and over 500 individuals were recorded statewide the following fall (NHFG data).

Richards (1952a) concludes: “In the recent history of the Hooded Merganser in New Hampshire, the outstanding feature is the apparent rate of reoccupation of old breeding grounds, undoubtedly one of the most rapid cases known. While it can be argued and is probably true to a limited extent that the species is an obscure-looking bird with secretive habits and that it must have been overlooked until the better coverage of later years revealed its presence, the fact remains that it appeared rather suddenly in some areas that had been fairly well covered right along, and almost simultaneously in various parts of the state. The apparent reasons for the comeback are obvious. One is, of course, better protection by law. Another is the growing-up of woodlands on abandoned farmlands around many ponds and along many streams, and a third is the return of the beaver.”

1950 to present. Continued increase from the 1940s to about 1960 since when there has been little observed change. Reported as increasing by Hunt (2012).

Spring. The first spring migrants have been suspected as early as the second week of February and have occasionally been recorded by the first week of March: 56 at Hinsdale 1 Mar 2008 (E.A. Masterson) and 6 at Pittsfield 5 Mar 1992 (A.E. Robbins). Peak spring migration period is the last week of March and the first 2 weeks of April.

Peak spring counts are usually lower than in fall, the highest at the coast being 225 at Newmarket 22 Mar 1997 (S.R. Mirick) and 170 at Hinsdale 27 Mar 2009 (P. Brown *et al.*), counts over 60 being unusual. It is thought that all migrants have passed through by the third week of May, but extreme late migrants cannot be distinguished from nonbreeding summer stragglers and breeding birds.

Summer and breeding. From about 1945 to the 1980s this species expanded its breeding range southward from the White Mountains and now breeds nearly statewide. It nests early, the earliest known fledged brood being 1 of 14 ducklings at Hampstead 24 Apr 2010 (R.A. Quinn, A. Maley). Richards (1952a) notes that “most clutches probably hatch by late May or early June even in northern New Hampshire.” Brewster (1924) recorded several mixed clutches of this species’s eggs with those of Wood Ducks and even 1 with eggs of both a Wood Duck and a Barred Owl. (See the Wood Duck species account for T. Richards’s records of mixed broods of this species with Wood Ducks in 1949 and 1965.) Broods often stay together well after fledging, and multifamily flocks are often noted in mid- to late August. In the *Atlas of Breeding Birds* Foss (1994) reports 78 confirmed and 5 probable breeding localities 1981–1986, most heavily concentrated south of the White Mountains. BBS data show a significant increase of over 5% per year in both 1966–2009 and 1999–2009 (Appendix IV). The elevation record for the state is 1 at Nancy/Norcross Ponds in Livermore at 3100 feet 26 Jul 2005 (B. Griffith).

Fall and winter. The first fall migrants regularly appear south of the breeding grounds by the last week of August; earliest known is 3 at New Hampton 12 Aug 1954 (V.H. Hebert) where it was thought not to breed that year. Peak fall migration period is the last 2 weeks of October and the first 2 weeks of November, birds often flocking at favored localities. Peak counts at this season are 120 in the Lake Winnepesaukee region 22–26 Nov 1962 (V.H. and R.C. Hebert) and 350 at Concord 12 Nov 2007 (P.D. Hunt, R.A. Woodward). From then until year-end, numbers typically dwindle, some regularly wintering at such localities as Great Bay and the Laconia–Tilton area. The Laconia CBC averaged 19 in the 1950s and 1960s, 25 in the 1970s, 43 in the 1980s, 97 in the 1990s, and 126 in the 2000s; the highest total for the Laconia CBC is 133 on 31 Dec 1994. In some years up to 40 have been found there in early February, and smaller numbers are occasionally found through the winter on openings in the ice on the Connecticut and Merrimack Rivers, sometimes as far north as southern Coos County. One hundred twenty-five were at Lake Wantastiquet in Hinsdale 5 Jan 2008 and 75 were still there 29 Jan 2008, and 124 were there 4 Feb 2009 (all E.A. Masterson). The northernmost known winter record is 1 at Pittsburg 2 Feb 1951 (F.T. Scott), a bird which remained through most of that month.

Taxonomic note. See Appendix I for report of presumed hybrids between this species and both Common Goldeneye and Common Merganser.

Common Merganser *Mergus merganser*

Status. Regular and common migrant in spring and fall, almost entirely on fresh water. Uncommon summer resident and breeder from the central Lakes Region northward but uncommon to rare in summer farther south. Locally common winter resident. Formerly common to abundant but declined sharply in 1865–1910, recovering somewhat by 1930 and more rapidly 1930–1945. Since then its population has been level to slightly lower, especially as a breeder.

Early reports to 1950. First reported for the state by Belknap (1792) who called it the “Cream-coloured Shell-drake, *Mergus merganser*.” Richards (1952a) provides an excellent summary: “The [Common] Merganser has apparently been common in New Hampshire continuously within historical times, but its population has been far from static, especially in summer. Very likely in the early days the species nested abundantly around all the bigger lakes and along the major streams of the State...Griscom (1948) describes a serious decrease...in the period 1865–1910 for New England, but Brewster (1924), while admitting heavy shooting of the species at Umbagog 1871–1909, does not mention any overall decrease even there. Most hunters shot the birds in the belief that they destroyed numerous trout, though Brewster...found from the contents of their stomachs that they fed almost exclusively on pickerel and minnows in the lake and [on] chub, dace and minnows in swift-flowing streams.”

Brewster (1924) noted it as “common at all seasons, abundant in autumn” at Lake Umbagog, usually most numerous in the month of October, though it must be recalled that the latest he ever stayed at the lake was 2 Nov 1884. He refers casually to seeing “as many as two or three hundred in a single day,” a high count that was not surpassed until 1947, and recorded that it had always wintered at the lake and at Errol, even in the severest seasons. Richards (1952a) continues: “Allen (1903) called [it] a rather common migrant, a less common winter resident inland and a ‘not uncommon summer resident about the ponds and streams from the White Mountain region northward.’ He found broods on the Saco River at Intervale, but apparently none further south, though he did mention a pair found at Hollis in Jul 1876 (W.H. Fox) which he speculated could have bred there. Dearborn (1898) did not list it as a summer resident for Belknap and Merrimack Counties, the former of which includes much of the central Lakes Region, though he found them there in migration and on the rivers about Great Bay in winter. Phillips (1922–1926) admits a reduction of the

breeding range of the species in the northeast, and Forbush (1912), while describing it as still a common migrant in New Hampshire, calls it ‘a rather uncommon summer resident from the White Mountains north.’ However, it began a slight increase in 1910–30, according to Griscom (1948), and increased greatly in the next decade. Such a trend seems to have been clearly reflected in New Hampshire, as [it] in the last several decades has pushed its breeding range throughout the Lake Region and even further south, nesting in the southeast at least as far down as Allenstown and Great East Lake and in the southwest all the way to Dublin Pond.” By the mid-1940s, its population had risen to the highest level known in the historical period.

1950 to present. The population crested about 1950, declined slightly into the 1980s, and has increased somewhat since. Reported as increasing by Hunt (2012).

Spring. Extreme early spring migrants are suspected in the coastal region by the first week of March: 218 on Great Bay and 70 at Kingston 1 Mar 1997 (A. and B. Delorey). Spring migration usually peaks in the last 2 weeks of March and the first 2 weeks of April, peak counts being 500 on Great Bay 25 Mar 1995 (S.R. Mirick, D.W. Finch *et al.*); 210 at Massabesic Lake, Auburn, 27 Mar 1954 (T. Richards); and 146 on the Androscoggin River below Gorham 25 Apr 1950 (T. Richards), peak counts over 85 being uncommon. Occasionally, numbers can still be found into early May in retarded seasons: 40 at Silver Lake, Tilton, 2 May 1950 (T. Richards) and 90 at Littleton 7 May 1963 (R.J. Bradley). The last migrants are thought to have passed through by the third week of May; 16 at Gilford on Lake Winnepesaukee 30 Jun 1997 (T. Donsker) could have been either late migrants or local breeders.

Summer and breeding. According to Richards (1952a) and Brewster (1924), this species nests primarily in hollow trees in New Hampshire. The latter author suggests also that clutches were complete at Lake Umbagog by 12–15 May, the young usually hatching by the second week of June, though flightless young were once found as late as 7 Sep 1888. The first known breeding record for the Lakes Region was in 1920 (H.H. Richards). Richards (1952a) notes that brood sizes vary widely, from “3 or 4 to 20 or more, though the largest are probably the result of more than one clutch.” An extreme example of bunching of ducklings was 65 young seen with only 2 adults in August of the “late nineteen thirties” at Lake Winnepesaukee (Bartlett and Hutchins 1970). Breeding was confirmed south of the Lakes Region at Andover in 1944–1946 (K.C. Elkins), shortly thereafter in Dublin (NHFG data), and at Goffstown in 1963 and 1965 (M. Hartshorn, R.W. Lawrence), though there has been a decline in the number of breeding pairs statewide since 1945–1950, especially in the south. Sixteen breeding pairs were known in 1953 (Lee 1954b) but only 3 pairs were

reported in 1969. Foss (1994) reports 30 confirmed and 6 probable breeding sites in 1981–1986, heavily concentrated in the Lakes Region and northern Coos County; fledged young were reported 11 May to 28 August. A pair with 5 ducklings in the southwest at Gilsum on the Ashuelot River 28 Jun 1994 (M. Wright) and a single hen with 46 young at Moultonborough 9 Jul 2007 (S. Goselin) are unusual reports. A pair bred in New Boston in 2009 and continues to breed at Dublin Lake (both E.A. Masterson). Surprisingly, BBS data show a significant increase averaging nearly 7% per year in 1966–2009 and 1999–2009 (Appendix IV).

Fall. The first fall migrants are suspected by the second week of September even though this species is one of the latest migrants of all the ducks. Peak of fall migration is typically the last week of October and the first 3 weeks of November. As noted by Richards (1952a): “They begin gathering in sizeable flocks on the lakes and rivers about the middle of October in northern New Hampshire, and reach a peak a month or so later. In the Lakes Region the process is somewhat later, and the largest flocks occur in late November or December, sometimes after the total numbers have fallen off somewhat.” Flocks also tend to build up in larger bodies of water as smaller ones freeze. This accounts for high counts such as 400 at Lake Umbagog on 16 Nov 1949 (T. Richards), 300 on Lake Paugus 24 Nov 1949 (T. Richards), over 700 on Lake Winnepesaukee 23–26 Dec 1950 (E. Lancaster), and a flock thought to possibly to have contained 1000 birds at Squam Lake 7 Dec 1947 (T. Richards). Note that all the foregoing high counts are in the 1947–1950 period; the only known counts approaching such numbers since are 750 at Lake Umbagog 19 Nov 1996 (R.A. Quinn, T. Richards), 1600 there 18 Nov 1998 (T. Richards *et al.*), 1000 at Squam Lake 12 Dec 2001 (R. Van de Poll), and an exceptional 2000 at Lake Umbagog 20 Nov 1997 (P. and J. Casey). Occasionally flocks of 100 or more linger at the end of the migration season into January and even February at favored localities. CBCs at Laconia averaged 133 in the 1950s, 69 in the 1960s, 47 in the 1970s, 43 in the 1980s, 145 in the 1990s, and 313 in the 2000s. High record for the Laconia CBC is 869 on 29 Dec 2001.

Winter. Fairly common inland on lakes and rivers with significant amounts of open water, flocks of 25–40 not being unusual, even north of the White Mountains. Richards (1952a) notes: “This is the only season when [Common] Mergansers are found in any numbers in the coastal region, as most of them arrive very late and leave very early. Great Bay and vicinity is where they are seen most commonly. The largest number observed on the Bay by the writer was about 125 birds, January 9, 1949. A few birds have been seen (there) as early as November 2 and as late as March 21, but December [to] February is the usual season.” Since 2000 there have been hardly any

reports from Great Bay or any coastal locality from December through February though inland sites are reported commonly.

Taxonomic note. See Appendix I for report of presumed hybrid between this species and Hooded Merganser.

Red-breasted Merganser *Mergus serrator*

Status. Common spring and fall migrant and winter visitor at the coast and at the Isles of Shoals, usually slightly more numerous in fall than spring. Inland, it is an irregular spring and fall visitor, also more numerous in fall. There is 1 winter record from the interior. It was apparently much commoner in colonial times, declined at least until 1910 and possibly somewhat more into the 1940s. A slight increase since then.

Early reports to 1950. First recorded for the state by Belknap (1792) as the “Red-belly Shelldrake, *Mergus serrator*.” The next certain record is that of Brewster (1924) who established the first inland record at Lake Umbagog when he shot 2 out of a flock of 12 near Big Island 27 Oct 1883. He also collected 4 other New Hampshire specimens at the lake in addition to some shot in ME and some sight records for which the state cannot now be determined. He considered it a “not uncommon transient visitor in autumn.” He also established the first known inland spring record, his only one: 2 birds seen 23 May 1881 near the outlet of the lake. The largest number he ever saw together in fall was 12, and in many years of the 1871–1909 period he saw none.

Richards (1952a) summarizes several early writers as follows: “There is little agreement on the past history of the Red-breasted Merganser in New England. Forbush (1912) mentions that it used to be a common summer resident in the interior of northern New England and describes the usual decrease for the period of heavy shooting before 1910, but he (1925) mentions no further decrease. Phillips (1922–26) even points to an increase in the 10 years following the abolition of spring shooting. According to Griscom (1948), however, there has been a slow decrease starting after 1910 and continuing to the time of his writing. Palmer (1949) merely mentions that it was [formerly] much more common in ME 60 to 80 years [before]...Allen (1903) called [it] a common migrant and winter resident coastwise and occasional inland, mentioning some Dublin records where it was an ‘irregular fall visitant’ *fide* G.H. Thayer. Dearborn (1903) did not give its relative abundance...for the Durham area, and he (1898) obtained no records for Belknap and Merrimack Counties, nor did Wright (1911) for Jefferson or White (1924b, 1937) for Concord. There is no evidence that the species was ever common in the interior of New Hampshire, though it may have once been more common in ME and along the whole coast.”

1950 to present. At best, a modest increase has occurred in this period.

Spring. Extreme early coastal spring migrants are indistinguishable from wintering birds but have been suspected by the second week of March. Peak coastal migration period is typically the last week of March and the first 3 weeks of April, though peak coastal spring count is an exceptional 830 flying north counted in half an hour at Hampton 14 May 1955 (K.C. Elkins); counts over 100 are unusual. Generally, this species is much less numerous in spring than in fall, though in neither season are counts in thousands known as they are in MA (Griscom and Snyder 1955). Since much migration may occur well offshore, more work is needed at the Isles of Shoals in peak migration periods. Latest certain spring migrants at the coast were 36 there 23 May 1963 (R.W. Lawrence *et al.*), 16 there 23 May 2004 (R.W. and M. Suomala), and 35 there 8 Jun 2004 (M.G. Harvey), though a few reports as late as the third week of June could have been migrants rather than summering birds.

Inland in spring, the earliest known record is 1 at Laconia 24 Mar 1968 (H.C. Anderson) and 2 at Sanbornton 24 Mar 2002 (M. and R.W. Suomala), but peak inland migration period is typically the last 2 weeks of April and the first 2 weeks of May, noticeably later than at the coast. Though Brewster (1924) found it inland in spring only once, since 1950 it has been recorded there almost every year. Peak inland spring count is 19 at Laconia 9 May 1950 (T. Richards), usual numbers are in the 1–5 range, and latest known inland spring record is 2 at Laconia 2 Jun 1961 (T. Richards).

Summer. There are no documented breeding records for the state, though it still breeds today in ME and did so in MA at least until 1989 (Veit and Petersen 1993). While it probably bred at the Isles of Shoals or along the New Hampshire shore in precolonial times, no such breeding records have survived. Since 1950, there have been scattered records of individuals or small flocks of up to 5 birds in the coastal region through July and August, so it is considered occasional to irregular at this season: 9 at Rye Ledge 18 Jul 1998 (A. and B. Delorey), 3 at Rye Ledge 4 Jul 2000 (S.R. Mirick, J. Mathews), 3 at North Hampton 22 Jul 2006 (S.R. and J. Mirick), 1 at Rye Ledge 24 Jul 2004 (R.W. and M. Suomala), 1 at Rye 1 Aug 2001 (D.B. and T. Donsker), 1 at Hampton 6 Aug 2005 (S.R. Mirick *et al.*), and 1 at Rye 15–29 Jun 2008 (S.R. Mirick).

Inland there are only 4 summer records, 2 of which are before 1950: 2 at Lake Winnepesaukee in Meredith 19 Jul 1937 (C. Robbins), 4 at Meredith 10 Jul 1940 (S. Robbins, Jr.), a drake at Lake Sunapee 2 Aug 1950 (R.P. Fox), and 1 at Pittsburg 16 Jul 1952 (J. Schumacher *et al.*).

Fall. Along the coast and at the Isles of Shoals, extreme early fall arrival is 2 at the coast 24 Aug 2009 (K. Rosenberg), next followed by 1 at Rye 12 Sep 1965 (R.W. Smart

et al.), and peak fall migration period is usually the last week of October through the first 3 weeks of November. Arrival in numbers, however, is highly variable and sometimes not until December. Peak count is 450 on 4 Dec 1965 (D.W. Finch) at the coast, though counts over 250 are unusual.

Inland, this species is more frequent and numerous in fall than in spring as it is at the coast, and it appears to have become more regular since 1950 than before. Extreme early fall inland report is 1 at Hinsdale 2 Aug 1958 (T. Richards); peak inland fall count is 11 at Errol 31 Oct 1954 (T. Richards). Peak fall migration period inland is the same as at the coast. By mid- to late December it is very rare in the interior.

Winter. Richards (1952a) notes: “Though one of the most characteristic and regular winter residents along the coast, occurring all the way from Great Bay to the open sea, like the Goldeneye [it] is generally more common than the White-winged or Surf Scoters. It is perhaps the least gregarious of the common wintering ducks.” The number recorded on the coast Christmas Count averaged 127 in the 1950s, 131 in the 1960s, 370 in the 1970s, 266 in the 1980s, 195 in the 1990s, and 198 in the 2000s; the high total for the Coastal CBC is 1246 in 1979. By late January to mid-February, the number reported wintering along the coast and at the Isles of Shoals has usually dropped to 20–100.

Inland, the only known winter records are 2 at Laconia 2 Jan 1954 (T. Richards *et al.*), 1 at Meredith 14 Jan 1954 (T. Richards), and 2 at Concord 22 Feb 1958 (M.N. Dodge *et al.*).

Ruddy Duck *Oxyura jamaicensis*

Status. Regular fall migrant but in highly variable numbers from year to year. Only occasional on spring migration, though some increase noted in recent years. Very infrequent summer straggler; rare in winter. Formerly moderately common, declined sharply from about 1895 to about 1925 and then began to increase in the 1930s, this increase continuing until the late 1980s since when another decline occurred.

Early reports to 1950. The first certain state records are 1 shot at Rye by W. Brewster 22 Aug 1879 (MCZ #210205) and 1 shot at Errol by M. Watson 23 Oct 1882 (MCZ #186535). Next earliest are 2 shot at Lake Umbagog 24 Oct 1884 by Daniel Heywood as reported by Brewster (1924) and 1 shot there by Brewster himself 27 Oct 1884 (BSNH #16106). Brewster (1924) recorded a total of only 21 individual birds on 9 occasions at the lake in fall 1878–1893 between extreme dates of 12 to 27 October; 3 were certainly in New Hampshire and 1 was certainly in ME but the exact location of the other records cannot now be determined. H. M. Spelman collected 1

at Rye 22 Aug 1879 (MCZ #210205). Dearborn (1898, 1903) records 3 specimens taken at Hampton by S. A. Shaw that were probably taken in fall and credits C. F. Goodhue for the only report he had for the Webster area in Merrimack County. Goodhue (1922) himself noted only that it had been found in Boscawen and New Hampton in fall.

Allen (1903) is the only early writer who hinted that the species might occur in spring, but he gives no reasons for this. He does list 2 summer straggler records: an adult drake at Newfound Lake 11 Jul 1901 (R.H. Howe, Jr.) and an adult hen collected at Rye Beach 22 Aug 1879 (W. Brewster). Allen (1903) noted that the latter record could have been an early fall migrant but speculated that since the bird was in worn breeding plumage it may have bred nearby, an idea made somewhat plausible by the species having been found breeding in MA in Aug 1890. Wright (1911) had only 1 record for the Jefferson region: 2 birds seen at Cherry Pond 22 Sep 1910 observed by himself and others. White (1924b, 1937) could only record that "it [had] been taken in the autumn migration" near Concord, no other specifics being available.

Richards (1952a) recaps as follows: "The Ruddy Duck may never have been especially common in New Hampshire, since it is not even listed by Belknap (1792)...In any case its overall numbers have greatly decreased in more recent years...According to Phillips (1922–26), the decrease did not begin until the middle eighteen nineties...Palmer (1949) describes the species starting to decrease about this time in ME...In New England as a whole the Ruddy Duck began to get really scarce about 1910, according to Phillips (op. cit.). It is apparent that there was no change for the better in the next 15 years, since Forbush (1925) described the species as a rare migrant at the time of his writing...Starting in the decade 1930–1940 there has been a slight increase of the Ruddy Duck in New England, at least in MA, according to Griscom (1948), and this may have been slightly reflected in New Hampshire."

Prior to 1947, since which year it has been regular in fall, Richards (1952a) had only a few reports: 27 at Squam Lake 7 Nov 1937 (T. Richards), 2 at Hanover 1 Nov 1939 (R.L. Weaver), a late summer straggler or early fall migrant at New Hampton 29 Aug 1943 (V.H. Hebert), and 2 drakes at Great Bay 1 Nov 1947 (T. Richards). The peak count of several records in the flight year of 1948 was 75 birds at Great Bay 4 Dec 1948 (T. Richards). The first cer-

tain spring records for the state were 1 at Hinsdale 3–24 Apr 1949 (R.H. MacArthur *et al.*), and 1 hen at Rye 30 May 1949 (T. Richards). Other reports that year were 1 at Hampton 21 Oct 1949, 4 at Kingston 9 Nov 1949, 1 at Hinsdale 10 Nov 1949, and 1 at Rye 8 Dec 1949 (all T. Richards).

1950 to present. Some increase from 1950 to the late 1970s, during which time it was found much less often in spring than fall. Another major decline in reports from 1980s to the mid-1990s followed by a major increase to date. Masterson (2003a) reviewed its status in the state.

Spring. Recorded in 9 spring seasons in 1950–1980 and sporadically since. Extreme dates are 1 at Hanover 16 Mar 2002 (S. Sturup) to 2 at Exeter 4 Jun 1999 and 1 there 4 Jun 2002 (both S.R. Mirick); high known spring counts are 11 at Squam Lake 7 May 1970 (E.H. Sherrard *et al.*) and 12 at Littleton 26 Apr 1999 (R.J. Bradley).

Summer. Four stragglers: 1 at Cherry Pond 20 Jul 1958 (V.H. Hebert), 2 at Derry 6–13 Jul 1967 (R.W. Lawrence, D.J. Abbott), 1 at Exeter 2 Jul 1992 (P.D. Hunt, I.J. Lovette), 1 at Exeter 29 Jun to 6 Jul 2008 (L. Medlock *et al.*). No evidence or suspicion of breeding.

Fall to winter. Earliest known fall arrival is 1 at Exeter 6 Sep 2009 (L. Medlock) followed by 7 at Antrim 11 Sep 1974 (H.M. Card). Peak fall migration period is typically the last 2 weeks of October and the first week of November, the latest known being 1 at Great Bay 28 Dec 1964 (D. Gallup) and 1 inland at Lake Winnisquam about 16–28 Dec 1994 (CBC). Reported in over 80% of fall seasons 1950–2009. Notable flights occurred in 1957, 1966, 1971, 1994, 1996, 1997, 1999, and 2005; the maximum fall single-day counts known were 463 on Great Bay at Newmarket 1 Nov 2005 (S.R. Mirick), 242 at Great Bay 5 Nov 1996 (S.R. Mirick), and an exceptional count of 635 at Lake Massebesic, Manchester, 18 Dec 1999 (CBC). There are virtually no counts over 50 except in flight years, the species usually appearing as singles or flocks of 10 or fewer birds. It is most frequently reported from inland localities, though the highest counts in flight years are often made on Great Bay. The latest known winter records are 1 at Exeter 5 Feb 2006 (M. and G. Prazar), 1 at Rye 24 Feb 2007 (S.R. Mirick), and 1 at Rye 28 Feb 2004 (R. Frechette, S. Spangenberg).

ORDER GALLIFORMES

FAMILY ODONTOPHORIDAE

Northern Bobwhite *Colinus virginianus*

Status. Native birds appear to have been extirpated since about 1920. Any present population likely originated as birds released for field trials.

Early reports to 1950. First recorded for the state by Belknap (1792) as the “Quail, *Tetrao virginianus*,” who also noted that it was a prolific breeder, suggesting that it was tolerably common. However, it must have been very scarce in New Hampshire in the precolonial era before much land was cleared, except possibly in the coastal region, due to lack of suitable habitat and severe winters. A specimen in the MCZ (#72765) taken by an unknown collector is dated Jan 1873. Later, as Forbush (1912) wrote: “When civilization and settlement extended, and grain raising became almost universal., the Bob-white must have multiplied throughout southern New England. Cultivation increased the weeds, and grain scattered among the stubble provided a new abundant food supply...[The] smaller game birds were little hunted by the settlers as long as deer, turkeys, [Passenger] pigeons, wild-fowl and grouse were plentiful...Under favorable conditions the Bob-white became common, if not abundant, over most of...southern New Hampshire.”

Silver (1957) outlines subsequent population trends in greater detail than can be repeated here but convincingly argues that the native race bobwhite population was at its height during “the period of greatest agricultural activity, extending roughly from 1830 to 1890.” She notes that grain production dropped sharply between 1880 and 1890 and that the quail population did also, the species becoming uncommon even in southern New Hampshire by 1892. Restocking efforts began by 1892 and continued through the 1890s but with little or no success, very possibly because the birds released were a race or races from southern localities which were less hardy. The bobwhite had become rare by 1897 and was nearly wiped out in the harsh winter of 1898–1899. The population recovered fairly well by 1902, but the following 2 winters were very severe and nearly extirpated the species statewide. By 1915 there had been almost no recovery, so a program of rather large-scale releases was begun involving 120–600 birds; releases were repeated in 1920, 1939, and about 1950. Even this program had no noticeable effect; the occasional birds observed during the 1930s and 1940s at localities other than where releases were made apparently being survivors of smaller plantings made by gun clubs or for field trials.

Even at the height of its abundance, the bobwhite was concentrated in the 3 southernmost counties of the state and in the 2 major river valleys, occasionally in some numbers as far north as the latitude of Lake Winnepesaukee. The northernmost report available is that of Allen (1903) who saw 1 “in the Saco valley at Intervale” in the summer of 1899, but he thought it might have been a released bird. The latest records for what were thought at the time to be native birds are 5 at Westmoreland in the spring of 1916 (L.O. Shelley) and a few at Dover Point in the coastal region about the same time (*fide* R.G. Carpenter 2nd).

1950 to present. A remote possibility exists of native birds from MA occasionally straggling over the state boundary, but the likelihood of this being the source of the few records in the southern part of the state since 1950 is poor. Griscom and Snyder (1955) report that the MA populations both in the Connecticut River valley and in Essex County were virtually gone by 1943 and 1952 respectively. About 100 birds were released in New Hampshire in 1953, the specific localities not recorded; 100 more were released in Chester in 1965. In 1950–1980, bobwhites were reported at 5 locations in the Connecticut River valley north to Wentworth, at 15 localities in the Merrimack River valley as far north as Concord and Epsom, from Alton and Strafford, and from 7 sites in the coastal region. In the *Atlas of Breeding Birds* project 1981–1986, no confirmed breeding localities were found and only 2 probable and 5 possible sites were found (Foss 1994).

All birds now known in the state are thought to be survivors from local releases or escapes from game farms. Single birds occasionally appear in the southern tier of counties and in the Merrimack River valley north to the area of Concord, Bow, Boscawen, Canterbury, Deering, Barnstead, Loudon, Henniker, Weare, Wolfeboro, and Hopkinton. Only in Epsom, where small numbers were reported 1967–1971, is there any recent suggestion that it has become temporarily established, however. Records increased in the Merrimack River valley since 1990. Apparent stray birds appeared at Tamworth 21 Jan 1992 (B. Steele), Plymouth 11 Jul 2000 (J. Williams, E. Stormont), 1 at Wilton 28 Jan 2005 (S. Millet), 6 as far north as Berlin 27 Aug 1998 (K. Dube), 1 at Chichester 21 Jul 2005 (M. Suomala), 5 at Lee 21 Jul 2005 (P. Brown *et al.*). Astonishingly, BBS data showed a population increase trend of over 5% per year in both 1966–2009 and 1999–2009 (Appendix IV); because of the very small numbers that have been reported in recent years, there is reason to doubt that these data are credible.

FAMILY PHASANIDAE

Chukar *Alectoris chukar*

Status. Introduced in 1939 and 1940, but did not become established. As more fully reported by Silver (1957), a total of 298 birds of unknown race were released at 30 separate localities in the southern parts of the Connecticut and Merrimack River valleys, in the central Lakes Region, and in the coastal region. The numbers released at each locality varied from a single bird to 12 pairs, but the birds were very tame and they all apparently succumbed to predators, disease, or severe weather within a year.

All more recent records are of escaped or released birds. Not all records have been reported since it is not a native species. Reports include 1 found at Warner on Mt. Kearsarge 20 Apr 1990 (J. Hill) and single birds at New London 8 Jul 1990 (M. Macurda), at Andover 29 Jul 1990 (A. Meier, K.C. Elkins), at Salem 19 Aug 1991 (D. Marotte), 1 at Nashua 23 Mar 1995 (A. Gaimare), at Windham 11 Jun 1995 (B. Laferte), at Merrimack 22 Jul 1995 (C. Johnson), at Alton 5 Feb 1997 (S. Elisia), at Benton from (late) Sep to 16 Oct 1997 (E. Nutt), at Acworth 3 Aug 1998 (J. and D. Netsch), 1 at Pittsfield 23 Apr 2005 (L. Federhen), 1 at Gilmanton 20 May 2005 (B. Boudette).

Gray Partridge *Perdix perdix*

Status. Introduced in 1908–1909 or shortly thereafter but never became established. The only reference to the presence of this species in the state is the comment of Forbush (1927) that “...during the years 1908 and 1909 nearly 40,000 were transported from Europe to America. During that time and since the birds have been introduced into...New Hampshire” and many other states. Records from Columbia 10 Dec 1997, 5 Jan 1998, and 7 Jun 2004 are presumably stray birds from local game clubs, or possibly from the population originally released in VT which may now be extirpated there. Introduced in ME and bred there for several years but never became established (ME-BRC website).

Common Quail *Coturnix coturnix*

Status. Introduced in about 1880–1881 and again in 1957 and 1958. It did not become established either time.

The first introduction is mentioned in the NHFG’s annual report for 1882 as follows: “The experiment of introducing the migratory quail of Europe into this country remains in uncertainty as to its success, as it did a year ago. There are some who believe that the birds which were liberated here, or their offspring, are still alive, and that their migrations are already established. Many are skeptical, and assert that the evidence of the success of

the experiment is not decisive.” None were reported subsequently.

The NHFG Department Biennial Report for 1957–1958 relates that numbers of this species were reared at the Department’s game farm at Brentwood beginning in 1957 with 10 pairs. A total of 642 birds were released in 1957 and 873 were released in 1958; all were about 5 weeks of age and all were released “in southern sections of the state.” However, this is a strongly migratory species and those that did not migrate out of New Hampshire probably succumbed to the winter weather or predators. In any event, none have been reported since 1958. The race of the birds released is not known. A specimen of 1 accidentally killed before its release was formerly in the collection at St. Anselm’s College, Manchester, but cannot now be found (*fide* J. Pitocelli).

A bird believed to be 1 of the 8 species in this genus was seen at Dover 17 Nov 2003 (G.W. Gavutis, Jr., J.Lanier) but the species is unknown; a probable escape.

Ring-necked Pheasant *Phasianus colchicus*

Status. Introduced. Uncommon to common permanent resident in appropriate habitat, entirely in southeastern New Hampshire and in the southern portions of the 2 major river valleys; numbers replenished many years by restocking. Likely no longer established as a self-sustaining population.

History. Belknap (1792) records the first introduction: “The late Governor Wentworth brought several pairs of pheasants from England, and let them fly in his woods at Wolfborough; but they have not since been seen.” Silver (1957) says the next introduction was in 1893, that releases by both a Mr. John Gould of Lebanon and by NHFG followed in 1895, and that there were further sporadic releases of small numbers in 1896–1909. Two were found at Nashua 24 Dec 1914 (M.B. Townsend). Ninety-eight were released in 1921 and 263 in 1922, but no more until 1928; 1023 were released in 1935 and the state’s rearing operation was then closed. A naturalized population was established and some wintered as far north as Plymouth in the Merrimack River valley as early as 1920–1922. It was common in agricultural areas around Concord in 1920 but had declined significantly there by 1930 (White 1937). Many birds died in the severe winter of 1923–1924 and flocks of 6–40 birds were driven into the suburbs of Manchester to feeding stations by heavy snow (Foster 1936).

Beginning in 1928, stocking by NHFG began in earnest; the mean annual number of birds released statewide by decade has been as follows:

1931–1940	1682	1971–1980	15,000 ^a
1941–1950	4339	1981–1990	10,054
1951–1960	11,855	1991–2000	11,450
1961–1970	12,548	2001–2009	13,280

^a Estimate; 19,434 in 1971 and 20,127 in 1972; data for 1973–1980 lost in NHFG headquarters fire 21 Apr 1984.

NHFG began raising its own pheasants again in 1948 and continued until 1975 when the entire game-farm population was destroyed due to an outbreak of equine encephalitis. After that year, about 12,000 birds were purchased annually from out-of-state breeders and were released in all 10 counties (Foss 1994). The first releases in Coos County were 1167 cocks in 1971 and 1440 in 1972. Though the sex ratio of released birds was about even through 1969 and some attempt was made to build up a breeding population, a change in policy then began to emphasize the production and release of cocks for the benefit of hunters. About 13% of 1970 releases were hens, about 7% were hens in 1971, and 11% were hens in 1972. Hessler *et al.* (1970) found that at least 80% of released birds died within a month and that over 90% of that mortality was due to predation.

Siegler's (1949) study concluded that New Hampshire had 365,000 acres of habitat potentially suitable for pheasants, of which 61% was in Hillsborough, Merrimack, and Rockingham Counties, but only 322,000 acres of which was then suitable due to limited winter food supply. He also concluded that the latter acreage "could carry a total breeding population of approximately 23,000 pheasants in a ratio of 4700 cocks and 18,600 hens."

Breeding and present distribution. Pheasants that survived the hunting season have bred in the wild for over 80 years. White (1926) said it was then "well established as a resident and breeding bird in southern New Hampshire." The size of the population increased slowly but steadily from the 1930s with the increase in the number of birds released each year, but probably has not risen much since 1960. The species has been found as far north as 3 at Jefferson 23 Oct 1998 (D. Govatski), Dummer on 15 Oct 1994 (K. Dube), Cambridge 28 Oct 1994 (D. Kilham), and wintered once north of the White Mountains in Randolph at a feeding station in 1967 (K. Arsenault *fide* W. Holden). Since 1970 presumed breeding birds have been found several times in Crawford Notch, and a hen was observed at 2000 feet elevation on Iron Mountain in Jackson in the summer of 1970 (L. Warren). Increasingly, a few have been reported since 1980 on breeding bird survey routes and on CBCs. In the Breeding Bird Atlas project 1981–1986, only 9 confirmed or probable breeding sites and only 11 possible breeding sites were

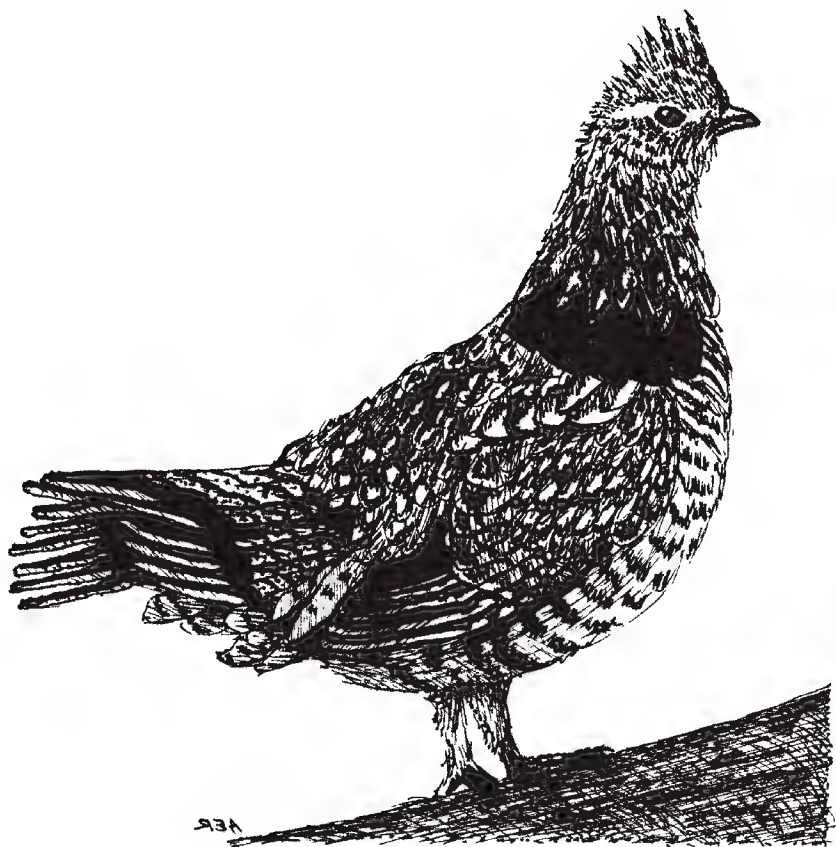
found statewide, and all were concentrated in the southeastern quadrant of the state (Foss 1994). In the 60 years since Siegler's 1949 study, the amount of suitable acreage for breeding and wintering has been sharply reduced due to reforestation and urban development in the southern part of the state. Very few reports since 2000. BBS data show a significant decline averaging more than 5% per year in both 1966–2009 and 1999–2009 (Appendix IV).

Ruffed Grouse *Bonasa umbellus*

Status. Generally common nearly statewide, least abundant in the more heavily populated southeastern and coastal portions, the population in a given area or statewide frequently subject to cyclical fluctuations.

Early reports to 1950. The first certain record is that of Belknap who wrote that "The Partridge is very common in our woods...[and] is very prolific; it is common to find twenty of its eggs in a nest." In precolonial times, this species's favorite early successional habitat was produced primarily by fire, wind, Beavers, flooding, and native American activities (WAP 2005). The presence of this species is mentioned in many early town histories, and Silver (1957) provides an exhaustive and detailed discussion of the history of Ruffed Grouse population trends in the state which can only be outlined here but which should be consulted for greater detail. At the outset, she states that, "Although the grouse is subject to marked periodic fluctuations, and may have always been so, population trends around the time of settlement, and at times during the 19th century, were much greater than they are today...Brewster (1925) wrote that...just before the Civil War, Ruffed Grouse were 10 times as abundant...as they were in the early years of the present century" near Lake Umbagog. After pointing out the long-term downward trend, she shows that numbers were high in 1790–1795 but had fallen to a very low level by 1830. A significant increase then occurred by 1842 and by 1855 the species was abundant again. There is a suggestion that the population fell again by 1862–1864 but "all available evidence shows that grouse were numerous all through the 1870s—possibly more so than at any other period of history." However, the pressure of market hunting in that decade took a great toll and by 1881 the "Fish and Game Department reported grouse virtually eliminated."

By 1884 the species's numbers began to recover, and it was plentiful again by 1896. As reported by Dow (1893), James W. Blake shot 758 in or near Hampton in 1857–1890. As this species's preferred early successional forest matures after about 10 years, it then moves to new areas to nest. Thus on balance, the breeding population increased statewide during the period following farm abandonment in the 1880s to about 1940 (WAP 2005). However, shallow population fluctuations continued after



1890: numbers were low in 1897, high in 1898, low in 1900, high again in 1902, and very low in 1907–1912. Numbers rose from 1912 to 1915 but crashed after that year until 1920, rose to a peak in 1924, only to crash again by 1926 and remain very low until a slight increase in 1929, followed by an even more severe drop by 1939, a big recovery by 1941–1942, another drop by 1944, some improvement by 1946, and another peak in 1948. After a slight setback in 1949, numbers steadily increased to a peak in 1952.

1950 to present. Silver (1957) and Allison (1963) show that population fluctuations have continued erratically. From a peak in 1952, numbers declined sharply to 1954, peaked again in 1956, only to fall to the lowest level in a decade in 1959. There was some recovery in 1960, and numbers stabilized at an intermediate level until 1966, after which they declined sharply to another low point in 1969. Only a slight increase was observed from then to 1972 from which point populations increased to 1977, only to taper off again to 1980. Usually nests at 3000 feet or below (WAP 2005); the elevation record is an adult with 5 young above 4000 feet in Benton on Mt. Moosilauke 7 Jul 1980 (R.A. Quinn). In the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or considered probable in 145 locations statewide and appears to be fairly uniformly distributed over all 10 counties (Foss 1994). Breeding population listed as declining in hardwoods and mixed forest since 1990 by Hunt (2009b). BBS data show a moderate population trend decline per year in both 1966–2009 and 1999–2009 (Appendix IV).

During low points in the cycles, birds may become very scarce on a statewide basis or there may be a few areas where the species is still tolerably numerous. In most instances of either great abundance or great scarcity, the

pattern is typically reflected in adjacent states as well as New Hampshire. As pointed out by Silver (1957), such increases and decreases are due to combinations of factors such as weather, habitat changes, food supply, predation, parasites, disease, and hunting pressure. How the interrelationships of such factors produce their effects is still poorly understood.

Taxonomic note. See Appendix I for a report and description of a presumed hybrid between this species and Spruce Grouse.

Spruce Grouse *Falcipennis canadensis*

Status. Uncommon and local permanent resident at higher elevations in the White Mountains and northward, very thinly distributed even in extensive areas of favorable habitat. Has probably declined significantly since 1800 but may have increased slightly since 1945. A species of Special Concern in New Hampshire.

Early reports to 1950. The earliest report for the state is that of Belknap (1792) who wrote that “The Growse is rarely seen as there are no dry heaths in New-Hampshire, but on the tops of the largest mountains, which are seldom visited by man. This bird has a red head, is larger than the partridge, and its flesh though red and dry, has a high flavour and is very tender.” Warden (1819, Vol. 1) stated that “The grouse, or heath-bird, is rarely seen except on the high mountains.” Brewster (1925) found it to be a “Permanent resident, more or less common locally,” in the Lake Umbagog region in 1871–1909, the New Hampshire locality where he found it most frequently being along Mollidgewock Brook in Cambridge, especially 1890–1909.

Weeks (1888) stated that it had been common in Coos County generally at the time of first settlement but that it had become scarce by 1885. As put by Silver (1957): “There is no evidence that [Spruce Grouse] numbers ever approached those of the Ruffed Grouse, and they do not seem to have been ever truly abundant...[If] Spruce Grouse were present in the more southerly parts of New Hampshire no record of their distribution remains. A few may have existed in spruce stands on some of the higher elevations [in the south] but they could hardly have been important without attracting some attention,” which they did not.

As pointed out by Richards (1954), the “Spruce Grouse ...was...hunted for the market despite its northern range [and] was considerably reduced in numbers, especially in the lower altitudes by 1885 when legal market hunting was outlawed. Allen (1903) called it “A not uncommon permanent resident...in the northern part of the state.” He noted it specifically in the White Mountains in the Presidential and Carter–Moriah Ranges from about 3000 to 4800–5000 feet, on the Twin Mountains, on Mt.

Moosilauke, Mt. Passaconaway, Tripyramid Mountain, Mt. Osceola, and Mt. Hancock. He found 1 as low as 2000 feet in the Pemigewasset Wilderness 2 Aug 1902.

Wright (1911) called it “An uncommon resident of the Presidential Range and formerly in heavily timbered lands in the valley bottom,” also mentioning several records on Mt. Adams in 1901–1909 and on Mt. Madison in 1908 and 1909. Goodhue (1922) never heard of a record south of the White Mountains. By 1941 it had become so scarce statewide that the hunting season for it was completely closed (Silver 1957).

The above suggests that the Spruce Grouse, while never abundant or even very common, was greatly reduced from its former numbers in the White Mountains and northward by 1885 and was uncommon then, at best. It appears to have declined further from then to 1941 after which, with protection, it began to recover slowly.

1950 to present. Consistent comparative data on the numbers and population fluctuations of this retiring species in New Hampshire are not available. Given its sedentary habits, even if it is not reported from a given area for several years, the lack of reports does not necessarily imply its absence (barring unusual circumstances such as habitat alteration). The authors’ best guess is that the population has been stable or has increased modestly since 1950 (*cf.* Foss 1994) but that it is still small. Extensive logging of lowland spruce-fir woodlands in the mid-to late 1900s probably reduced the grouse populations in those areas in contrast to higher elevations where the forest is protected (*fide* R.W. Suomala).

Since 1950, Spruce Grouse have been proved to be breeding by the observation of young in at least 25 different localities on over 50 occasions. It is presumed that the species is probably present in nearly all of these 25 localities today, at least in small numbers, all but 3 of which are within the boundary of the White Mountain National Forest. In addition, Spruce Grouse have also been seen since 1950 at another 24 localities, either in or out of the breeding season, and in several cases on more than 1 occasion. While no young have yet been observed at these localities, the species presumably breeds at all or most of them. During the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or considered probable at 18 localities, all but 4 of them in the White Mountains, and 20 other sites were considered possible (Foss 1994). The southernmost known locality was at the summit of Sandwich Mountain on the Waterville Valley/Sandwich town line (E.S. Daniell III *in* Foss 1994). At present, it is thought to breed only in the White Mountains and northward; a good distribution map is in WAP (2005).

Taxonomic note. See Appendix I for report and description of a presumed hybrid between this species and Ruffed Grouse.

Greater Prairie-Chicken *Tympanuchus cupido*

Status. If there was a native population of the extinct eastern race *T. c. cupido* known as the Heath Hen, no unequivocal record of it in the state has survived. A few birds of unknown race were introduced about 1893 but did not become established.

Colonial era to about 1820. Most early references to this species in New Hampshire rely on the report by Belknap (1792) of the “Growse” quoted in the species account for Spruce Grouse above, which we believe refers to the latter species. Forbush (1912, 1927), Gross (1928), and Silver (1957), in varying degrees, all assumed Belknap was referring to Heath Hens. Greenway (1958) called Belknap’s report for Heath Hen “not convincing,” and Palmer (1949) notes that the Spruce Grouse was frequently called the “Heath” Hen in parts of ME as it probably also was in New Hampshire. Yet Goodhue (1922) believed that it had occurred in colonial times, and Richards (1954) said that “it appears...that the Heath Hen...ranged as far north as New Hampshire but was not common and disappeared soon after the establishment of the first settlements.” If it did occur, it was surely confined to the southernmost parts of the 2 major river valleys and the coastal region.

The most persuasive report for the state is that of Potter (1856) who writes that “[t]he Heath Hen was formerly found on Heath-hen Hill [near Manchester on the Merrimack County–Hillsborough County line] in abundance. They are somewhat larger than the quail, have gray plumage, and their head is crested somewhat in the manner of a pea-cock. Their flesh is said to be sweeter than that of the quail or partridge.” The locality cited is much farther south than any at which Spruce Grouse is thought to have ever occurred. Potter (1856) records it as being present there as late as 1820 when he says it was common, but probably it did not survive much longer than that, if it was ever there at all. Despite this report which has the ring of accuracy to it, absent other confirmation of the species’s status as a native New Hampshire bird, it is probably best considered hypothetical.

Introduction. Dearborn (1898) and Allen (1903, 1909) both mention that in the early 1890s “a number” were introduced in Blue Mountain Park in Croydon, Sullivan County, but that they soon disappeared. Dearborn (1898) thought this introduction sufficient explanation for 1 being shot thirty miles away in Sanbornton about Mar 1893, 1 killed in Boscawen about the same time, and several more seen in the same vicinity (*cf.* C.F. Goodhue). The birds did not become established and died out shortly thereafter. A specimen in the Goodhue collection formerly in the Concord Public Library (Keith 1974) of unknown origin might be the bird shot at Sanbornton; it was originally owned by Mr. Will Stewart of nearby

Franklin. The source and race of the introduced birds is unknown. Considered hypothetical for ME (ME-BRC website).

Wild Turkey *Meleagris gallopavo*

Status. Recently reintroduced and the population has now spread statewide. The original native population was also widespread south of the White Mountains but was extirpated about 1854.

Early reports. The first record for the state is that of Belknap (1792): “Wild Turkeys were formerly very numerous. In winter they frequented the sea shore...They are now retired to the inland mountainous country.” Silver (1957) states that “The entire southern half of New Hampshire was formerly turkey range., although near the northern edge of this area, as the mast-bearing trees gave way to conifers and winters became more severe, turkeys must have been rather uncommon.” She concludes that they must have been most numerous in Cheshire, Hillsborough, and Rockingham Counties; colonial era records exist from the towns of Swanzey, Surry, Troy, Walpole, Winchester, Antrim, Weare, Temple, Peterborough, Hudson, Amherst, New Ipswich, Hancock, and at Wilton where the last 1 was shot in 1797.

The only specific Merrimack County localities from which the species was definitely recorded are Hopkinton (Lord 1890) and Dunbarton (Little 1888). Silver (1957) continues: “The counties of Hillsboro, Merrimack and Cheshire were settled roughly between the years 1730 and 1760, and turkeys appear to have decreased steadily from settlement to the end of the 18th century.” The latest certain date for Temple was 1790 (Blood 1860). Cochrane and Wood (1895) mention turkeys on Crotched Mountain near Francetown at about 2000 feet elevation and 1 shot there by a Dr. Farley as late as 1815. Allen (1921) summarizes: “[I]t appears that Wild Turkeys formerly frequented southern New Hampshire from the coast nearly to Lake Winnepesaukee in the low country, and to the lower hills in the western part of the state. The last report of a probably wild-raised bird is that of 1 shot at a location now lost about August, 1842, and sold in the market in Boston.” NHFG reports the last wild bird at Weare in 1854.

Recent introduction. In a deal with the West Virginia Department of Natural Resources, 25 wild-trapped birds were swapped for 25 wild-trapped Fishers *Martes pennanti*; the turkeys were released in 1969 (Siegler 1969) and in 1970. All the birds were released near Deerfield in Pawtuckaway State Park: 5 gobblers and 6 hens 22 Feb to 8 Apr 1969 and 4 gobblers and 11 hens 25 Feb to 24 Mar 1970. A brood of 4–5 young was raised in 1969 but survival through the 1969–1970 winter was poor. An estimated 6–7 broods containing about 30 young were raised



in 1970, raising the total population to about 50. However, in the very severe 1970–1971 winter, mortality was about 50% and the birds were scattered. Only 2 broods containing 3 young were reported in 1971 and no nesting was recorded in 1972. In 1969–1972 there were reports of turkeys from other localities which can be accounted for by privately pen-raised stock that has either been released or escaped. Such reports came from Croydon, Swanzey, Rye, Keene, Antrim, Dunbarton, Effingham, Gilmanton, Henniker, Boscawen, Wilton, and Barnstead. Since 1972 the population has been augmented by further releases by NHFG of 25 in Jan 1975 in Walpole and Westmoreland and some more in 1976. A flock of at least 30 wintered at Langdon 1978–1979 (R.S. Holt *et al.*). In 1981–1986, turkeys were confirmed or thought probably to be breeding at 23 sites, primarily in the Connecticut River valley, parts of the Merrimack River valley, and the coastal region (Foss 1994). Single early reports as far north as Stark 17 Sept 1973 (Mrs. W. Emery *et al.*) and Orange on 10 Nov 1973 (G. Cavis) may be best explained by stragglers from the large population built up in eastern VT consisting of birds released by the VT Fish and Game Department beginning in 1969.

Beginning in 1978 and 1978, NHFG began trapping some naturalized birds from areas where they had become established and transplanting them to other parts of the state. Transplants were made to 13 new sites by 1995, primarily in the Merrimack River valley and the coastal region. The *Atlas of Breeding Birds* project 1981–1986 (Foss 1994) reported it breeding sparingly from the central Lakes Region southward, especially in the southeastern part of the state and areas adjacent to the lower Connecticut River valley. The first report as far north as Berlin was 23 May 1996 (S. Hale, D. Felch), and the northernmost observation was at Pittsburg 9 Jun 2004 (J. and L. Duprey). Peak single-site counts to date are 202

at Monroe 19 Dec 2006 (E. Emery, P. Powers *et al.*), and 150 as far north as Bath 25 Feb 2007 (R.J. Bradley). One hundred forty-six were reported statewide on CBCs 1992–1993, 742 in 1999–2000, 1119 in 2003–2004, and 1475 in 2009. Total statewide population was estimated at 5000–7000 in summer 1995 and at 45,000 by Aug

2009; it has now been reported in every town in the state (*vide* NHFG), a truly incredible increase. Breeding population listed as increasing in hardwood and mixed forest by Hunt (2009b) and BBS data show a population trend increase averaging over 20% per year in both 1966–2009 and 1999–2009 (Appendix IV).

ORDER GAVIIFORMES

FAMILY GAVIIDAE

Red-throated Loon *Gavia stellata*

Status. Regular fall migrant, winter resident in small numbers, and spring migrant in the coastal region and at the Isles of Shoals, somewhat more numerous in fall. A rare and irregular fall migrant inland but known inland few times in spring. General abundance apparently little changed since the 1870s.

Early reports to 1950. The first state report is that of Belknap (1812) who lists “Brown throat Loon, *Colymbus septentrionalis*.” The next records are probably those of Brewster (1924) at Lake Umbagog in 1871–1909, though he gives no specific records within New Hampshire’s boundary. He had no spring records and only found it irregularly in fall, calling it an “Uncommon transient visitor” between extreme dates of September 17 and October 21. Goodhue (1877a) reports shooting an adult male near Webster in fall of 1876. Dearborn (1898) had only that record for Belknap and Merrimack Counties but (1905) referred to it as a “rarity” at Northfield, suggesting it had been found there in the interval. Dearborn (1903) also noted that this loon was “found along the coast in considerable abundance during the migration season, but more particularly in the fall. Adults appear toward the end of September; later comers are immature birds.”

Allen (1903) considered it a rare fall migrant inland and said “it should occur as a winter resident” along the coast. He also recorded 1 taken at Alstead 4 Nov 1886 that was still in the Acworth–Silsby Free Public Library collection in 1972 (Keith 1974). Thayer (1904) reported 2 at Dublin Pond 12 or 13 Oct 1903; and Lord (1918) records 1 collected near Hanover but does not provide the date or exact locality. Goodhue (1922) called it “very rare in the interior of the state at any time, though it is doubtless found each fall in very small numbers in the larger lakes.” Though the above record has many discontinuities, Palmer’s (1949) remark for ME would seem appropriate: “...the transient and winter population is about the same as in the 1870’s,...but their numbers apparently were fewer for a decade or two at the turn of the century”

when the hunting pressure described by Dearborn (1903) was greatest.

1950 to present. Little change from the early 1900s.

Spring. Onset of spring migration is thought to be by the second week of March, extreme early migrants being indistinguishable from wintering birds. The peak known spring count of 35 at the coast 11 Mar 1962 (ASNH field trip) surely included many transients. Peak of coastal spring migration is usually the last 2 weeks of April and the first 2 weeks of May, peak count in this period being 20 at the Isles of Shoals 11 May 1969 (ASNH field trip) and 20 along the mainland coast 3 May 2003 (S.R. Mirick *et al.*). An unusual count was 26 at Rye 26 May 2005 (J.P. Smith). Griscom and Snyder (1955) suggest that what can be seen from the short New Hampshire coastline is a mere shadow of the heavy migration that passes just offshore, numbers over 1000 in a day having been recorded off MA in the peak spring period. More work needs to be done at the Isles of Shoals at this season. Extreme late coastal spring records are 3 at the coast 17 Jun 1999 (S.R. Mirick), an immature at Hampton 20 Jun 1995 (P.D. Hunt), 1 at White and Seavey Islands 23 Jun 2007 (D. and M. Hayward *et al.*), and 1 at Seabrook 29 Jun 2008 (S.R. and J. Mirick).

Inland, there are 5 known spring records: 1 extremely early at Enfield 7 Apr 2000 (P.D. Hunt), 2 at Chesterfield 29 Apr 1961 (T. Richards), 1 at Enfield 17 May 1994 (P.D. Hunt), 1 at Sutton 26 May 1994 (K.C. Elkins), 1 at Enfield 15 May 2002 (B. Johnstone).

Summer. One at Rye 11 Aug 1983 (D.J. Abbott); 1 at Rye 19 Jul 1991 (P.D. Hunt, A. Leukering); 1 at Rye 9 Jul 2009 (E.A. Masterson); and 1 at Seabrook 29 Jun and 3 Aug 2008, possibly the same bird (both S.R. Mirick). Single birds at North Hampton 23 Aug 2009 (L. Medlock *et al.*) and at Seabrook 25 Aug 2002 (M. Suomala) seem more likely to be summering birds than early migrants. One known summer straggler inland, 1 photographed at Squam Lake while present for about 10 days in Jul 1967 (C. Platte *et al.*; Ridgely 1977).

Fall. Extreme early coastal fall arrival date is obscured by summering birds. Peak migration period at the coast is

in the last 2 weeks of October and the first 2 weeks of November, though this varies and the species occasionally does not arrive in numbers until late November. Peak fall coastal count is 488 migrating by on 19 Oct 2008 (S.R. and J. Mirick) not including 2 other counts over 250 that month; prior to that event counts over 100 were infrequent. A total of 523 loons of uncertain identity were seen from the mainland migrating south “well offshore” 16 Nov 2002 (S.R. Mirick, J. Lawrence) which probably belong here based on record numbers of this species identified passing Cape Ann, MA, the same day. As in spring, this suggests that the bulk of the migration passes by offshore.

Inland, fall migrants have been observed only on major lakes and along the 2 major river valleys, and more commonly in the Connecticut than the Merrimack valley. From 1950 to 1972, 43 individual birds were recorded from 15 different localities between 18 Oct 1970 at Auburn (R.W. Lawrence) and 8 Dec 1950 at Clarksville (T. Richards). Over half of these birds were found in the first 2 weeks of November. Peak inland fall count is 10 at Chesterfield 5 Nov 1959 (T. Richards) except for the extraordinary flock of 200–300 at Mascoma Lake, Enfield, 11–13 Nov 1985 (J.D. Toffic). In both 1959 and 1963, a modest inland “flight” was observed, with small flocks noted and single birds seen in several localities. In most other years only 1 or 2 birds are reported per season. One found by hikers sitting helplessly at the summit of South Carter Mountain holds the elevation record of 4430 feet on 9 Nov 2003; it was photographed, carried back to a rehabilitation facility, and subsequently released in the ocean.

Winter. Fall migration is usually over by mid-December and numbers seen are down to wintering levels. The Coastal CBC averaged 9 birds in the 1950s, 5 in the 1960s, 17 in the 1970s, 6 in the 1980s, 12 in the 1990s, and 15 in the 2000s. Highest Coastal CBC counts were 31 in 1975 and 1976. A few regularly winter along the coast, numbers varying from under 10 to about 20; winter status at the Isles of Shoals is unknown.

Pacific Loon *Gavia pacifica*

Status. Rare. One female specimen collected at Hampton Beach in May 1910 by S. Albert Shaw (Brooks 1919, White 1922, Forbush 1925, Keith 1974) who gave it to the Boston Society of Natural History (specimen #BSNH 12469). Now on display in the mounted collection of the Museum of Science, Boston.

The following remarks of Goodhue (1922) are of interest: “I can record three specimens of this loon shot off Boar’s Head in the last twenty-five years. One shot about 1895 in October. Another October 10, 1902, and the third October 15, 1903. No doubt there have been others but most

gunners would take them for small specimens of the Common Loon.” A winter-plumaged loon labelled as this species but without data was in the mounted Goodhue collection at NHFG headquarters in Concord until it was lost in a fire 21 Apr 1984. However, because none of the specimens cited by Goodhue were examined by an experienced taxonomist, his 3 records remain hypothetical.

Since 1965, it has been found 9 times from October to July: 1 nearing breeding plumage at North Hampton 28 Mar 1965 (R.W. Smart, D.W. Finch, V.H. Hebert); 1 on Great Bay at Durham 17 Apr 1965 (A.C. Borrer), possibly the same individual; 1 at Rye 6 Jan 1985 (D.J. and S.D. Abbott); 1 in breeding plumage near Rye Ledge 14–20 Jun 1996 (D.J. Abbott *et al.*); 1 at Rye 9–11 Jul 2004 (S.R. Mirick, D. Crowley *et al.*; photo NHBR 23 [2]: 4), 1 at North Hampton 31 Oct 2005 (R.S. Ridgely, A.J. Vazzano); and 1 at Rye 15 May 2007 (D.W. Finch *et mult.*).

Common Loon *Gavia immer*

Status. Regular spring and fall migrant and winter resident on the ocean in the coastal region and at the Isles of Shoals, occasionally nonbreeding birds present there in summer. Inland a regular spring and fall migrant in moderate numbers and increasingly local resident and breeder. Declined sharply as a breeder since 1850 but has increased since the late 1900s. Now considered a threatened species in New Hampshire.

Early reports to 1950. In precolonial and colonial times, it was surely a common migrant and breeder at most large ponds and lakes virtually statewide. First recorded by Belknap (1792, 1812) both as the “Sea Loon, *Colymbus immer*,” in winter plumage and “Large-spotted Loon, *Colymbus glacialis*,” in summer plumage, the latter on the authority of a Mr. Peck. In the 1800s it was still a common breeder and summer resident nearly statewide, especially in the north (Coues 1868, Maynard 1871). The first systematic observations are those of Brewster (1924) at Lake Umbagog in the 1871–1909 period. He states that it was “Formerly a very common summer resident” but that due to shooting and general molestation began to decline by the mid-1880s and by 1900 had “almost, if not wholly, ceased to breed in any part of the Lake.” He estimated that “Between 1871 and 1880 there were probably never less than five or six pairs...breeding in different parts of the Lake.” Goodhue (1877a) considered it a common summer resident in the Webster area that might still breed since it had done so “a few years ago.” Morrison (1883) records that it was still nesting at Windham. Jenkins (1884) states that it bred at Bow Pond, Strafford, and commonly at Northwood at the time of writing.

Dearborn (1898) describes its status in Belknap and Merrimack Counties: “The number of loons...[in] this section has plainly decreased within the last two decades.

Twenty years ago they bred every summer at one or more of the ponds...[at the] headwaters of the Suncook river...But the small waters have proved too favorable to wanton hunters. Those which have not been killed have been frightened away.” He mentions that they formerly nested at New Hampton and still did regularly at Lake Winnepesaukee. Howe (1901–1903) listed it as an uncommon migrant at Newfound Lake, unknown in summer and, if it ever did breed, eliminated as a breeding species some years before. As for the coastal region, Dearborn (1903) considered it a regular but uncommon winter resident, a spring migrant in May, and a fall migrant in October and November at Great Bay, nonbreeding birds being irregular summer residents on the ocean.

Allen (1903) called it “A common spring and fall migrant and winter resident along the coast, and common inland in migrations...; a few still breed about the lakes in the southern part of the state, and in the less disturbed regions to the north they are yet fairly common summer residents.” Specifically, he knew of current breeding in Squam Lake, at Breed’s Pond near Chesham (*fide* G.H. Thayer), and in 1899 at Lake Sunapee (*fide* W.H. Fox). Wright (1911) had no record of it breeding in the Jefferson region, his only reports being of spring migrants. Goodhue (1922), in contrast to his remarks in 1877, considered it an “uncommon summer resident” of the Webster area and also thought it might have ceased to nest at Lake Winnepesaukee. White (1924b, 1937) considered it irregular in the Concord area in spring, rare there in fall, and unknown to breed there then. Finally, as noted by Richards (1972–1975): “We know from Mr. W. Bolton Cook, who has been visiting Lake Umbagog regularly since the year of Brewster’s last visit there, the local population of the Common Loon had recovered its former numbers and become more or less stabilized by 1930 or so. This [also] may well have happened elsewhere in New Hampshire...” A total of 71 were seen at the coast including 50 in the ocean off Great Boar’s Head 1 May 1948 (T. Richards).

In summary, this species seems always to have been a relatively common migrant, the major change in its New Hampshire status occurring in its numbers as a breeder. The above accounts suggest its progressive elimination as a nester from smaller bodies of water, first in the southern part of the state by 1850 and from the central part of the state by 1870–1900. Even the population on large lakes such as Umbagog and Winnepesaukee suffered from human intrusion from about 1885 to 1920. However, there appears to have been a modest recovery of numbers statewide through the 1930s and 1940s, presumed migrants being recorded regularly in April and October, nesting in the Lakes Region and elsewhere at least by 1946, and an unusually late flock of 11 presumed migrants flying north over Melvin Village 28 Jun 1946 (Mrs. H.B. Foster).

1950 to present. Has continued to be a common migrant but declined sharply as a breeder to about 1975 after which, with protection and encouragement, it has increased. Breeding population listed as increasing by Hunt (2009b, 2012).

Spring. Due to the presence of wintering birds, onset of spring migration in the coastal region is not discernable with precision, though the first migrants there are suspected by the last week of March or even earlier: 123 flying north along the coast 4 Mar 2007 (S.R. and J. Mirick) and 152 there 23 Mar 2001 (A. and B. Delorey). Peak of coastal spring migration is from the second week of April through the first 3 weeks of May, peak counts in this period being 167 at White and Seavey Islands 14 May 2002 (D. Hayward *et al.*) and 450 seen off Rye 26 May 2005 (J.P. Smith), though counts over 20 in a day are unusual. Latest migrants cannot be surely told from summer lingerers but probably pass through until the second week of June: 2 adults believed to be migrating were observed flying north past Star Island 7 Jun 1970 (R.W. Smart), 21 were along the coast 10 Jun 2006 (S.R. and J. Mirick), and 7 were at White and Seavey Islands 17 Jun 2005 (M. Barney *et al.*).

Inland, spring migration follows the opening of the lakes, so loons may have no place to land north of the White Mountains until mid-April or later. Extreme early inland record is 2 at Monroe 19 Mar 1964 (R.B. Emery *et al.*). Peak migration period is the same as at the coast. Highest inland spring count is 64 at Chesterfield 11 May 1957 (T. Richards) after a storm, though counts over 30 are infrequent. As these figures suggest, this species is often more concentrated as a migrant in the interior than at the coast in spring. Latest inland migrants may occur into June but cannot be recognized due to summer stragglers and breeding birds.

Summer and breeding. Presumed nonbreeding or prebreeding birds are found irregularly in summer off the coast, in Great Bay, or at the Isles of Shoals. High count of such birds is 16 along the coast 1 Jul 2004 (S.R. Mirick). Other nonbreeding birds occur regularly at Lake Winnepesaukee and Squam Lake and from irregularly to occasionally on smaller lakes statewide. Since 1950, breeding has been confirmed by the presence of young at Squam Lake, Center Conway, Moultonborough, Chesterfield, Littleton, Lake Winnepesaukee, Pittsburg, Conway Lake, Manchester, Errol, Chatham, Barrington, Sandwich, Windsor, Deering, Concord, Northfield, Wakefield, Meredith, and Lake Umbagog. Presumed nesting pairs have also been observed in many other localities too numerous to list here. Thus, this species is still breeding nearly throughout the state except on the southeastern coastal plain and in the coastal region, though it breeds most commonly in the central Lakes Region and north of the White Mountains. However, improved ac-

cess to and accelerated development of lake frontage statewide has caused the species to disappear from many places where it bred before because of disturbance by motorized watercraft. The most alarming cases have been Squam Lake and Lake Winnepesaukee where good numbers of adults are often seen in summer but few young have been raised. On those 2 lakes combined, a 1970 census found 52 adults but only 5 young and a 1971 census found 35 adults and only 8 young. Such numbers of adults are probably atypically high because only 10–15 adults have been found in other years. The total number of pairs estimated to be breeding in the state each year also has varied widely.

The Loon Preservation Committee (LPC) “has helped bring about a substantial increase in the state’s loon population since 1978 by promoting public interest in loons, locating and posting nesting territories, patrolling lakes, and providing nesting rafts. The numbers of nesting and territorial loon pairs in New Hampshire had risen to 86 and 132, respectively, in 1986, and to 127 and 176 in 1993” (Foss 1994). However, numbers in specific areas can vary widely year to year: the number of territorial pairs on Lake Umbagog dropped from 31 in 2000 to only 15 in 2002 (Taylor and Vogel 2003). Nest failures due to high water levels after wet springs can reduce breeding success sharply (1998, 2006, 2009); ingestion of split-shot lead sinkers has poisoned adult birds which could have significant long-term consequences (Cooley 2006). An excellent map of the breeding population is in WAP (2005). A study of 87 New Hampshire lakes showed that large lakes are preferred for breeding by this species (Blair 1992). BBS data show a moderate population trend increase in both 1966–2009 and 1999–2009 (Appendix IV). Loon breeding success has been below rates needed to maintain a stable population for 5 of the past 6 years. Paired adult loons are far below estimates of New Hampshire’s carrying capacity and declined in 2011 after recent declines in productivity (chicks surviving per territorial pair) and high adult mortality from ingested lead tackle. These declines occurred despite record levels of management and outreach to increase productivity and decrease adult mortality.

A summary of the growth of the Common Loon breeding population provided by LPC is as follows: (see table on following page).

Fall. While some migratory movement may occur in the coastal region as early as the last week of July, certain mi-

grants are not usually noted until mid- to late August. Coastal migration is well under way by mid-September: 136 at Rye 18 Sep 2008 (S.R. and J. Mirick). Peak fall coastal migration is typically the last 3 weeks of October and the first 2 weeks of November, peak counts in this period being 322 passing Rye 7 Oct 2007 and 464 at the coast 17 and 18 Oct 2008 (both S.R. and J. Mirick), and 64 flying south past Star Island 26 Oct 1970 (D.W. Finch). Such numbers suggests that often much fall coastal migration may take place over the ocean out of sight of land; more work at the Isles of Shoals could confirm this. From then peak period numbers taper off into late December. Mean number found on the Coastal CBC is 37 in the 1950s, 40 in the 1960s, 63 in the 1970s, 48 in the 1980s, 80 in the 1990s, and 83 in the 2000s; maximum Coastal CBC total is 144 in 1986. Mean number found on Isles of Shoals CBCs in 1965–1972 is 8, on 8 counts in 1973–1990 is 9, and on 8 counts 1991–2010 is 26.

The first certain inland fall migrants are usually noted in late August: 3 at New Hampton 23 Aug 1959 (R.W. Smart *et al.*). The birds also collect at favorable localities about this time before flying south, as 19 at Harrisville 28 Aug 1972 (*fide* S.D. Gilcreast), 48 at Lake Winnepesaukee 12 Sep 1965 (B. Densmore), and 80 at Pittsburg 8 Oct 2005 (T. Swain). Peak migration period is the same as at the coast, highest count in this period being 20 in the western Lakes Region 4 Nov 1961 (V.H. Hebert *et al.*) though daily counts over 15 are rare. Inland numbers drop sharply by early December, an unusual late record being 54 on Bow Lake 16 Dec 1973 (Mrs. L.C. Hardwick). Latest known record north of the White Mountains is 1 at Lake Francis, Pittsburg 15 Dec 2009 on a CBC (R.A. Quinn *et al.*), and latest interior record is 2 at Laconia 2 Jan 1954 (CBC).

Winter. Numbers present at the coast vary greatly from year to year, ranging from under 20 to over 60. Low point in numbers seen from shore is often mid-February after which numbers in inshore waters often build up by early March, presumably in anticipation of spring migration: 81 at the coast 9 Mar 1957 (K.C. Elkins *et al.*). The only known possible inland overwintering record other than occasional birds found to late January and rarely to early February is 1 in the Merrimack River in 2011 from Jan at Manchester (L. Hansche) to 20 Feb (P. Verville, B. Dyment).

A summary of the growth of the Common Loon breeding population provided by LPC

	Territorial	Nesting	Chicks	Chicks			
Year	Pairs (TP)	Pairs (NP)	Hatched (CH)	Surviving (CS)	CH/NP	CS/CH	CS/NP
1976	74	51	48	44	0.94	0.92	0.86
1977	87	60	45	38	0.75	0.84	0.63
1978	82	56	44	35	0.79	0.80	0.63
1979	94	65	67	58	1.03	0.87	0.89
1980	87	62	63	51	1.02	0.81	0.82
1981	102	74	61	50	0.82	0.82	0.68
1982	110	81	89	74	1.10	0.83	0.91
1983	114	85	97	80	1.14	0.82	0.94
1984	109	70	73	56	1.04	0.77	0.80
1985	122	82	92	76	1.12	0.83	0.93
1986	131	86	97	67	1.13	0.69	0.78
1987	135	92	101	67	1.10	0.66	0.73
1988	154	92	93	71	1.01	0.76	0.77
1989	149	94	99	70	1.05	0.71	0.74
1990	161	104	106	80	1.02	0.75	0.77
1991	164	101	109	85	1.08	0.78	0.84
1992	167	110	133	89	1.21	0.67	0.81
1993	174	122	118	88	0.97	0.75	0.72
1994	196	109	119	91	1.09	0.76	0.83
1995	198	117	113	85	0.97	0.75	0.73
1996	202	133	120	88	0.90	0.73	0.66
1997	209	121	125	98	1.03	0.78	0.81
1998	217	137	101	66	0.74	0.65	0.48
1999	199	134	123	95	0.92	0.77	0.71
2000	215	149	176	127	1.18	0.72	0.85
2001	212	148	144	113	0.97	0.78	0.76
2002	200	133	140	117	1.05	0.84	0.88
2003	204	149	168	136	1.13	0.81	0.91
2004	209	136	156	127	1.15	0.81	0.93
2005	204	152	142	112	0.93	0.79	0.74
2006	218	140	130	104	0.93	0.80	0.74
2007	223	141	131	103	0.93	0.79	0.73
2008	247	160	128	97	0.80	0.76	0.61
2009	264	184	161	109	0.88	0.68	0.59
2010	274	184	170	128	0.92	0.75	0.47

ORDER PODICIPEDIFORMES

FAMILY PODICIPEDIDAE

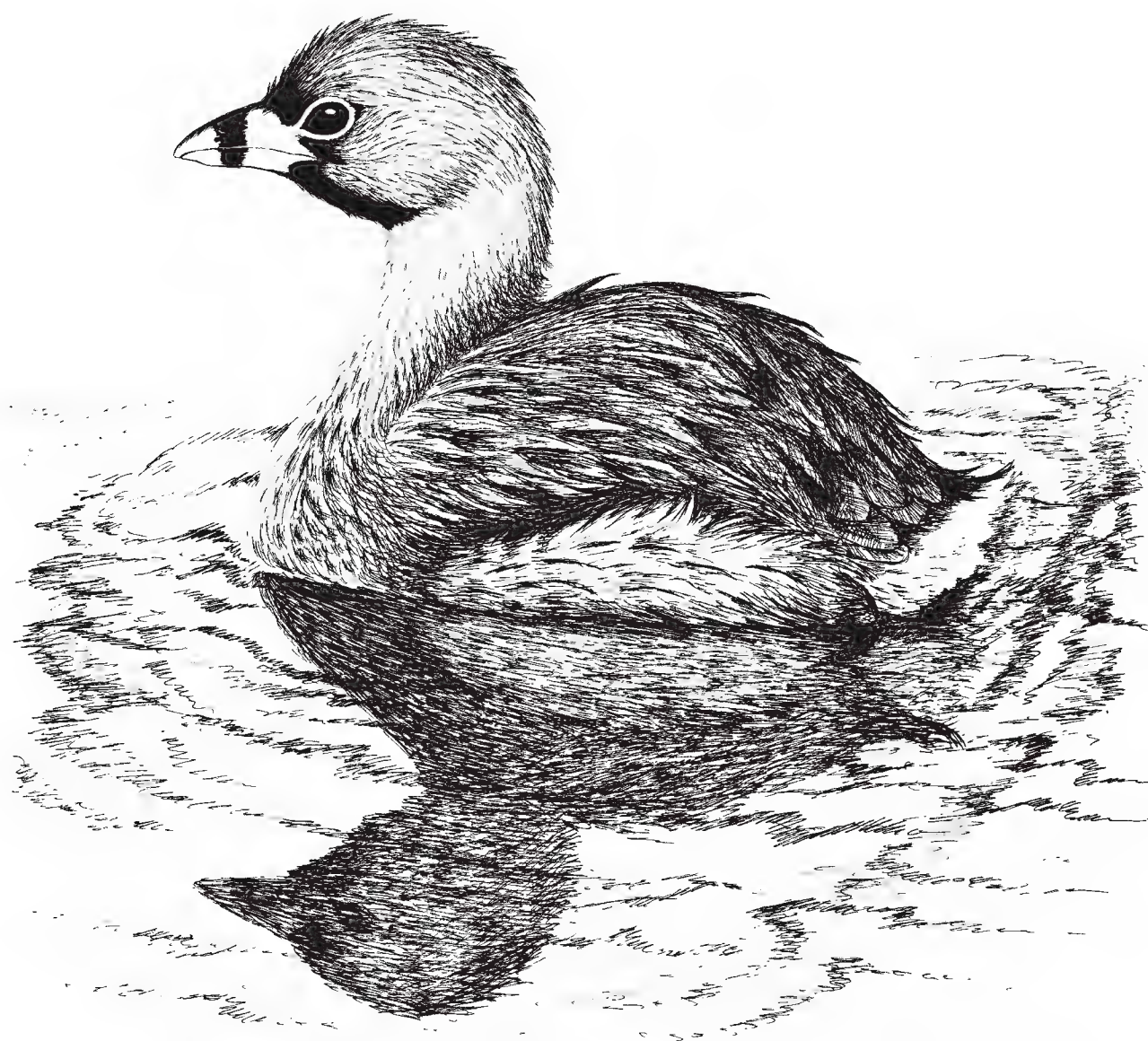
Pied-billed Grebe *Podilymbus podiceps*

Status. Regular but uncommon to rare spring migrant, very local breeder in summer, and a regular and common fall migrant, occasionally lingering into and possibly through the winter. The records indicate a modest increase from the late 1800s to the 1960s since when it has declined. Now considered a Threatened species in New Hampshire.

Early reports to 1950. First recorded for New Hampshire by Belknap (1792) as the “Dabchick or No Tail, *Colymbus podiceps*,” on the authority of a Mr. Peck. The next reports appear to be those of Brewster (1924) who called it a “not uncommon transient visitor in autumn” at Lake Umbagog in 1871–1909. He notes that it was unknown to breed in the lake then, though it did at other lakes nearby just over the border in ME. He had no spring records for the lake and but 1 in summer, 1 seen near the dam in Errol in the Androscoggin River on 16 Aug 1873. His extreme dates in fall were from 1 September to 10 October and 1 seen 21 Oct 1884, though the exact state in which these records were made is unknown. The largest number he

saw in a day seems to be 3. Maynard (1871) considered it only a transient in Coos County. Dearborn (1898, 1905) merely recorded it as present in Belknap and Merrimack Counties and in Northfield without further comment. He (1903) listed it as a fall migrant from “the first of September...til nearly or quite November” in the coastal region near Durham, but mentions no spring records or evidence of breeding.

Allen (1903) called it an “uncommon spring and fall migrant, and a rare summer resident;” he knew of 1 summer record at Webster (*fide* Goodhue 1877a) but thought it probably bred in the interior of the southern part of the state. Wright (1911) only had fall migration records for the Jefferson region where he considered it “uncommon” 23 August to 4 October, his high count being 7 at Cherry Pond 15 Sep 1908. Goodhue (1922) noted an unusual winter record at Webster 29 Jan 1924, and Allan (1931) reports 1 at the Isles of Shoals 13 Jan 1930, though without specifying in which state. White (1924b) only had a few fall records for the Concord area but later (1937) considered it “...uncommon in spring, common in autumn” as a transient, unknown to breed, with extreme dates of 10–30 April in spring and 4 September to 10 November in fall. His highest count was 10 at Big



Andrea Robbins 1991

Turkey Pond 12 Apr 1928 (G.P. Milne), still the highest known inland count in spring. The above suggests that this species may have increased in numbers both as a spring and fall migrant from 1900 to 1950, probably most rapidly in the 1920–1935 period, but that its status as a scarce breeder is probably unchanged.

1950 to present. A notable decline from the 1960s through the 1980s and 1990s; continued decline in some areas (e.g. Squam Lake, Sandwich) but statewide numbers appear stable since 2000. Population trend considered uncertain by Hunt (2012).

Spring. Extreme early arrival of birds thought not to have wintered are 2 at Laconia 7 Mar 2006 (H.C. Anderson) and 1 at Kingston 10 Mar 2004 (S.R. Mirick). Peak spring migration period is usually the first 2 weeks of April, and high count in spring is 13 at the coast 8 Apr 1967 (E.W. and L.G. Phinney *et al.*). By early May late migrants become indistinguishable from birds possibly breeding, though stragglers possibly pass through until late May.

Summer and breeding. The species prefers smaller weedy ponds and weedy inlets of larger lakes, but is not always found in habitat that would appear to be suitable. While some localities where it formerly bred are now too disturbed, there is no evidence that it was ever an abundant or even a common breeder statewide. In the mid-1900s it was “widely distributed throughout the state during the breeding season, occurring as far north as Pittsburg and nesting at Errol” (T. Richards *in* Foss 1994). Now thought to breed only at a few localities such as Lake Umbagog, Cherry Ponds, and a few sites in the southeast part of the state. In the *Atlas of Breeding Birds* project 1981–1986, Foss (1994) showed only 7 proved and 3 probable breeding localities in the entire state. It has bred sporadically at many other localities, making extreme late spring and early fall migrant dates indistinguishable. Richards (1958a) considered it to have become an uncommon summer resident and Elkins (1961) no longer found it breeding in the Webster area. Since 1960, numbers appear to have declined, primarily due to habitat loss, disturbance, and degradation. In summer of 2002, it was found in June and July at 3 localities after not being recorded at any in 2001. Ten birds were noted at 5 localities in Jul 2003; a female and 3 young were at Durham 13 Jun 2004 (S.R. Mirick *et al.*), and adults with chicks were at Piermont 23 Jul 2005 (J.P. Williams) and Rochester 14 Aug 2005 (D. Hubbard), and 25 adults with 17 juveniles were at Brentwood 22 Aug 2006 (T. Bronson). Seven breeding pairs at Brentwood and a total of 36 birds were there 21 Jul 2007 (T. Bronson *et al.*). WAP (2005) calls it always local and moderately rare with a patchy distribution well shown with a distribution map. BBS data show a significant population trend decline averaging over 5% per year in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. A few southbound birds are usually suspected as early as the third week of August, though occasional migrants may appear earlier than that: 1 at Exeter 8 Aug 2004 (S.R. Mirick). Peak fall migration period is not well defined, varying from year to year and occurring any time from mid-September to late October. Fall high counts rarely exceed 15, but peak counts are 28 at Kingston 14 Oct 1993 (A. and B. Delorey) and 36 there 31 Oct 2007 (S.R. Mirick). Migration is usually over by late November, but a few birds frequently linger in larger inland lakes and on the Merrimack and Connecticut Rivers, or at coastal localities such as Great Bay, until mid-December and more rarely until the second week of January.

Winter. Away from salt water, this species winters rarely, notable records being 1 at Laconia 30 Jan to 2 Feb 1951 (T. Richards), 1 there 14 Jan 1954 (T. Richards), 1 at Tilton 14 Jan 1970 (R.W. Smart), 1 at Errol 26 Jan 1991 (C. Barber *et al.*), 1 at Hookset 15 Feb 1971 (*fide* H.B. Miller), and 1 at Berlin 28 Feb 1971 (V.H. Hebert). It is also found sporadically through the winter in the coastal region and tidal areas such as Great Bay, such as 3 at Portsmouth 1 Feb 1970 (K.C. Elkins) and 1 at Exeter until at least 19 Feb 2002 (S.R. Mirick). There is a handful of CBC records, the most notable being 4 at the coast in 1972 and 1973.

Horned Grebe *Podiceps auritus*

Status. Regular spring and fall transient inland, along the coast and at the Isles of Shoals, only slightly less common inland in spring than in fall. Winters regularly on salt water and rarely inland if not frozen out. Recorded several times as a summer straggler, twice inland. Some increase since 1900 but a slight decline since 1990.

Early reports to 1950. The first New Hampshire records appear to be those of Brewster (1924) at Lake Umbagog in 1871–1909. He found it a “regularly common and sometimes abundant” transient in fall but unknown in spring or summer. His extreme dates were from October 2–25, though he found it most frequently in the last 2 weeks of that period, occasionally seeing over 50 birds in a day. Howe (1901–1903) reported 1 taken at Newfound Lake 20 Nov 1900 (A. Adams). Dearborn (1898) included it in the list for Belknap and Merrimack Counties on the authority of C. F. Goodhue though the latter (1877a) had not found it in the Webster area by 1877 and though Dearborn (1905) called it a “scarce migrant” at Northfield only 7 years later. Dearborn (1903) also listed it as a “fall and spring visitant at Great Bay, and a winter resident along the coast” but made no comment about its abundance. Allen (1903) merely called it a “regular autumnal migrant” inland, possibly wintering on the coast, apparently being less well informed than Dearborn. Wright (1911) listed it as a “spring and fall migrant” in

the Jefferson region, crediting F. B. Spaulding that “several were shot on the Connecticut meadows...in the spring of 1908” and mentioning a specimen possessed by Spaulding that was taken on 29 Apr of that year, the first known inland spring record. Wright (1911) also reports 1 at Saco Lake, Crawford Notch, 23 Sep 1906 (R.M. Marble). Lord (1918) mentions 1 collected near Hanover in 1912–1917 but provides no specific date or locality. White (1924b, 1937) only knew of 1 specimen taken by Goodhue at Webster after 1877 but did not provide the date, presumably in fall. Though this species may have been overlooked in spring in earlier times, this seems unlikely; there are no inland spring reports in RNEB 1935–1948. The first known report since 1908 was 8 at Laconia 28 Mar 1949 (T. Richards).

The earliest known fall migrant was 1 found inland at New Hampton 31 Aug to 17 Sep 1946 (V.H. Hebert), and for the first time numbers began to be reported inland in the fall: 20 at Squam Lake 2 and 22 Nov 1947 (T. Richards), 50–70 on several dates from 20 Oct to 20 Dec 1948 at Lake Winnisquam (T. Richards), and 5 were still present there 7 Jan 1949 (T. Richards). Eighty-five were found at the coast 26 Apr 1949 and 87 were at Laconia 5 Dec 1949 (T. Richards). The first known inland summer straggler was 1 in breeding plumage at New Hampton 4–23 Jul 1945 (V.H. Hebert). The numbers occurring inland in fall and on salt water generally appear to have increased since 1900.

1950 to present. Numbers stable to slightly higher in this period, especially inland in spring, but perhaps a decline in winter coastal numbers.

Spring. Numbers begin to increase along the coast by early March, extreme early migrants not being distinguishable from wintering birds. Peak coastal migration period is the last 2 weeks of March and the first 2 weeks of April, and peak spring count at the coast is 200+ on 16 Apr 1960 (K.C. Elkins), though counts over 50 are scarce. By mid-May nearly all migrants have left, extreme late coastal records being single birds at Rye 15 Jun 2008 (S.R. and J. Mirick) and at Rye on 16 Jun 1962 (K.C. Elkins *et al.*).

Inland, with the exception of a bird at Ossipee 7 Mar 1954 (R. Candy) which may have successfully wintered there, earliest known spring date is 1 at Laconia 16 Mar 2002 (P.D. Hunt). Inland peak migration period is typically later than at the coast, being the last 2 weeks of April. High inland spring counts are 130 at Littleton 23 Apr 2002 (R.J. Bradley), 150 at Squam Lake 26 Apr 1992 (G.W. Gavutis, Jr.), and 212 in the Concord area 25 Apr 1971 (T. Richards *et al.*), though records over 50 are unusual. This grebe is now only slightly less numerous or less frequently observed as a spring migrant inland than in fall. Latest known inland spring report is 1 at Massabesic Lake, Manchester, 27 May 1961 (T. Richards).

Summer. Nonbreeding birds in high plumage have been found at North Hampton 1 Jul 1968 (L.G. Phinney), at Rye 25 Jul 1954 (K.C. Elkins), 1 there in Jul 1984 (S. Walter), 1 inland at New Hampton 4–23 Jul 1945 (V.H. Hebert), 1 at Rye 1 Jul 2005 remained at least to 16 Oct 2005 (S.R. Mirick *et al.*), 1 at Rye Ledge 11 Jul 2006 (R.W. and M. Suomala), 1 at Rye 24–31 Jul 1993 (S.R. Mirick, D.J. Abbott *et al.*), 2 at Wentworth’s Location 2 Aug 1963 (H.C. McDade) and 1 at the coast 3 Aug 2008 (S.R. and J. Mirick), the latter 3 birds possibly being extremely early fall migrants. One was seen intermittently at Rye all summer from 6 Jun (S.R. and J. Mirick) to 28 Aug 2007 (M. Suomala *et al.*).

Fall. At the coast, the extreme early fall arrival date known is 1 at Rye 7 Sep 1968 (ASNH field trip). Peak coastal migration period is typically during the last 2 weeks of October and the first 2 weeks of November, but arrival in numbers is highly variable, sometimes not occurring until late November or even December. Peak fall coastal count is 100 on 19 Nov 1952 (C. deWindt), but counts over 75 in a day are rare.

Inland, the extreme early fall record is 1 at Pittsburg 9 Sep 1963 (V.H. Hebert *et al.*). There are usually a few inland records by early or mid-October, but peak migration period is as variable as it is at the coast. High count in the usual peak migration period is 110 at Chesterfield 10 Nov 1955 (T. Richards), though numbers over 50 in a day are unusual and there have been no such records since 1995. From mid-November, flocks often gather at favored localities such as Laconia into early winter, examples being 180 there on 26 Nov 1961 (H.C. Anderson), 300+ at Lake Winnisquam 14 Dec 1957 (T. Richards), and 213 on the Laconia CBC 2 Jan 1954.

Winter. A few always occur along the coast and at the Isles of Shoals, numbers typically ranging from 20–100. The Coastal CBC averaged 86 in the 1950s, 53 in the 1960s, 30 in the 1970s, 20 in the 1980s, 23 in the 1990s, and 24 in the 2000s, the high being 254 on 26 Dec 1953, suggesting some decline. Inland winter records are 1 at Charlestown 6 Feb 1971 (W.W. Kidder), 1 at Hooksett 15 Feb 1971 (H.B. Miller), and 1 at Newfound Lake 9 Feb 2002 (P. Johnston). Concentrations such as those noted above for Laconia have typically disappeared by the last week of January at the latest.

Red-necked Grebe *Podiceps grisegena*

Status. Regular spring and fall transient along the coast, at the Isles of Shoals, and inland. Irregular in winter on salt water and on rare occasions is found inland in winter. Occasional summer stragglers both at the coast and inland. Appears to have increased significantly as a spring migrant inland since 1900.

Early reports to 1950. The first known state records are

those of Brewster (1924) at Lake Umbagog in 1871–1909. He considered it regular and “not uncommon in autumn, apparently rare in spring” since he had only 1 spring record, 2 in the New Hampshire part of the lake 21 May 1897. His extreme fall dates were from 8 Oct (1893) to 1 Nov (1884) and he recorded it most frequently from 15–25 October, though it must be remembered that the latest he was ever there was 2 November. Goodhue (1877a) reported 6 birds shot by others in the Webster area in spring 1876, and he collected 1 as late as (early?) June that year. Dearborn (1898) considered it “of regular, though not very common, occurrence” in Belknap and Merrimack Counties based on only 2 records: 1 in breeding plumage at Alton (F.T. Collins) on a date not recorded and 1 shot at Lake Winnisquam in the fall of 1895. Dearborn (1905) called it a “rare migrant” at Northfield and (1903) said it was “rather common in October and November on Great Bay where it may also be found in April and May. Along the coast it is...[usually present] in winter.” Allen (1903) had little to add, calling it “a rare spring and fall migrant [inland], on the coast...and uncommon winter resident.” Lord (1918) mentions 1 collected near Hanover in 1912–1917 but provides neither date nor precise locality.

Thayer (1904, 1912) reported 12–15 at Dublin Pond 12 Oct 1903, 3 of which were collected (MCZ #294985–#294987). Smith (1921) reports 1 spending the winter of 1918–1919 in the Connecticut River near Woodsville, the first known inland wintering record. Goodhue (1922) reported 1 taken at Boscawen 5 Mar 1913 (W.G. Goodhue) and mentioned that in late fall “...a few years since a flock of these birds...became scattered over the towns of Warner, Webster and Salisbury...” Allan (1931) mentions 1 seen at the Isles of Shoals 24 Feb 1930, without specifying in which state. That same winter there was a remarkable late fall and early winter inland flight which was apparently not associated with powerful storms on the ocean or unusual weather conditions other than sudden cold. At least 25 birds were found at 13 localities in Cheshire and Hillsborough Counties and at Concord between 10 Dec 1929 and 20 Feb 1930 as described in detail by Shelley (1930c). Other records occurred in eastern VT and interior MA in the same period. Behavioral notes on birds captured during this flight are given by Shelley (1930a) and White (1931a). No comparable flight has been recorded before or since. White (1924b) only had the specimen reports by Goodhue from Webster in 1876 and Boscawen in 1913, and later (1937) he still called the species “rare” and had only 1 new report for the Concord area, 1 seen there 9 May 1930. If other birds were present in the 1930s, they went unreported, and there were only 6 reports in RNEB 1940–1945. In 1946–1949 it began to be recorded regularly in both spring and fall both at the coast and inland, highest counts being only 20 on 20 Apr

1946 at Rye (A. and M. Argue) and at Lake Winnisquam 2 Nov 1948 (T. Richards).

In summary, the inland status of this species in fall appears to be little changed since Brewster’s time, despite the paucity of data. In spring, however, this grebe appears to have become more numerous and frequent by the 1940s than in 1880–1900, and in 1946–1949 was found more often inland in spring than in fall. There seems to be no good way of measuring any change in status there may have been on salt water since 1900.

1950 to present. Spring records in the interior have increased.

Spring. The first birds thought to be migrants arrive in coastal waters by early March but cannot be positively distinguished from wintering birds, though 74 at the coast 3 Mar 1994 and 125 there 18 Mar 1995 (both S.R. Mirick) surely included migrants. Peak coastal migration period is usually the last week of March and the first week of April, the birds’ appearance being much more predictable at this time than in the fall peak period. Peak spring coastal counts of migrating birds are 158 on 8 Apr 2006 (S.R. and J. Mirick), 175 there 4 Apr 2004 (S.R. Mirick *et al.*), and an exceptional 245 on 4 Apr 1994 (S.R. Mirick), though counts over 75 are unusual. Latest coastal spring record is 1 at Hampton 23–29 Jun 1998 (S.R. Mirick).

Inland, extreme early arrivals are 1 at Hinsdale 29 Mar 2008 (E.A. Masterson) and 1 at Lisbon 31 Mar 2000 (R.J. Bradley). There are more inland spring records in the last 3 weeks of April than any other period. Peak inland spring counts are 196 at Littleton 23 Apr 2002 (R.J. Bradley) and a remarkable 450 on Squam Lake 26 Apr 1992 (G.W. Gavutis, Jr.; K. Strobel), there being few counts over 15. Latest inland spring records of probable migrants are 1 at Squam Lake 16 Jun 1977 (B.S. Ridgely *et al.*) and 20 Jun 2004 at Barrington (A. Smith, S. Shepard *et al.*).

Summer. Single birds at New London 31 Jul 1990 (K.C. Elkins), and at Washington 3 Aug 2002 (C. Wirzburger, L. Holton). Single birds were along the coast at Rye 23 Jun 2004 (S.R. Mirick *et al.*), at North Hampton 28 Jun 2004 (S.R. Mirick *et al.*), at Rye 12 Jul 2004 (E.A. Masterson), at Rye 31 Jul 2009 (M.G. Harvey), and at Rye 7 Aug 1998 (S.R. Mirick). An exceptional 3–4 birds were at Seal Rocks, Rye, 17 Jun to 23 Jul 2006 with 4–6 there 5 Aug to 4 Sep 2006 (S.R. and J. Mirick *et al.*), mostly presumed to be the same birds. It appears inland irregularly from mid-August: 1 at Turkey Pond, Concord 13 Aug 1951 (T. Richards), 2 at Littleton 14 Aug 1989 (S.B. and M. Turner), and 1 in full breeding plumage at Pittsburg 18 Aug 1964 (F.T. Scott).

Fall. Extreme early arrival at the coast is 12 Sep 1954 (K.C. Elkins). Peak fall migration period is typically the

middle 2 weeks of November, though arrival in numbers is extremely variable; in some years this is not until late December, or occasionally early as 36 at Rye 28 Oct 2006 (S.R. and J. Mirick). Peak fall coastal counts are 72 on 28 Dec 1957 (CBC) and 165 off North Hampton 23 Nov 1991 (A. Delorey), but counts over 25 are unusual. Means for the Coastal CBC are 22 in the 1950s, 8 in the 1960s, 61 in the 1970s, 57 in the 1980s, 88 in the 1990s, and 51 in the 2000s; highest known count is 288 in 1991.

Inland this species is regular in fall but usually in smaller numbers than at the coast. Earliest arrivals are 2 at Sandwich 20 Aug 2004 (T. Richards) and 13 at Whitefield 4 Sep 1997 (I.C. MacLeod *et al.*). It occurs irregularly through September and regularly in early October. Since 1950, peak inland migration period has been from the third week of October through the first week of November, a bit earlier than at the coast. Peak inland fall count since 1950 is 28 on Mascoma Lake 3 Oct 1993 (P.D. Hunt), and latest fall migrant known is 1 at Laconia 30 Dec 1957 (CBC).

Winter. Present along the coast and at the Isles of Shoals in small numbers in most winters, but may not be found on a given day, and systematic observations at the Isles of Shoals are lacking. Peak counts at this season are 71 off Rye 29 Feb 1980 (E.W. Phinney) and 100 at the coast 28 Feb 2009 (E.A. Masterson). Inland late winter records include 1 at Tilton 25 Feb 1959 (T. Richards), and single birds brought to wildlife rehabilitators at Winchester 16 Feb 1994 (M. Colby) and at New London 16 Feb 1994 (R. Leavitt).

Eared Grebe *Podiceps nigricollis*

Status. Vagrant from the west. Records of at least 3 different birds.

Records. One photographed at the Rochester wastewater treatment plant 14–23 Sep 1998 (S.R. Mirick, D.W. Finch; photo). One at Rye 30 Nov 2006 (D. Hubbard) seen and

photographed until last seen 14 Mar 2007 (B. Griffith). Very possibly the same individual bird found at exactly the same place 17 Nov 2007 (S.R. and J. Mirick, T. Bronson *et al.*) was also seen and photographed by many until last seen at Hampton 16 Apr 2008 (T. Bronson, D.J. Abbott). Since 1955 has occurred almost annually in MA (Veit and Petersen 1993, BO database 2010), 5 accepted records for VT (C.C. Rimmer pers. comm.), and there are at least 2 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Western Grebe *Aechmophorus occidentalis*

Status. Vagrant from the west. At least 3 records from November to May; once inland in July.

Records. An adult found at Hampton Beach 3 Apr 1938 was still present 26 May 1938, studied carefully both times by E. J. Goellner and a group of his students (Goellner 1939). No descriptions have survived which eliminate the possibility of it's having been a Clark's Grebe *A. clarkia*, but there was no known New England record for *clarkia* until 1 in ME in 2005 (ME-BRC website). Presumably the same individual bird returned to Rye from 1986 into 1991: 1 at Odiorne State Park 28 Mar 1986 (R.A. Quinn *et al.*), 1 at Pulpit Rocks 1 Jan 1988 (D.J. Abbott, S.R. Mirick), 1 there 29 Jan to 22 Mar 1989 (R.R. Rathbone *et mult.*), 1 there 25 Nov 1989 to 12 Feb 1990 (B. Coulton *et mult.*), and 1 at Rye 24 Nov 1990 to 8 Mar 1991 (E. Tarry *et mult.*). One at Pulpit Rocks 16 Feb 2002 (S.R. Mirick *et mult.*) was possibly the same bird at Rye 18–19 May 2002 (R.A. Woodward) and 1 at Newmarket on Great Bay 29 May 2002 (S.R. Mirick)—the latter birds were possibly the same as some of the 2–4 birds present at Parker River National Wildlife Refuge just south of the MA state line 6 Mar to 30 Apr 2002 (Perkins 2002). One inland at Squam Lake 21 Jul 2007 (J. Cooley *et al.*; photo NHBR 26 [2]: 4). At least 7 records for ME (ME-BRC website, P.D. Vickery pers. comm.) and over 40 records for MA (Veit and Petersen 1993, BO database 2010).

ORDER PROCELLARIFORMES

FAMILY DIOMEDEIDAE

Yellow-nosed Albatross *Thalassarche chlororhynchos*

Status. Vagrant from the southern oceans. Two reports, the first considered hypothetical because it was not in New Hampshire waters and the second considered indeterminate as to species. One observed “near the south end of Jeffreys Ledge” 24 Oct 1980 (E.W. Phinney) has since been determined to have been in MA state waters. One off Great Boar’s Head 6 Jun 2006 (J. O’Shaughnessy, E.S. Aaronian) lacked sufficient detail to be certain of the species. Eight accepted records for ME (ME-BRC website) and 2 sight records for MA (Veit and Petersen 1993).

Black-browed Albatross *Thalassarche melanophris*

Status. Vagrant from the southern oceans. Considered hypothetical for lack of better details of the observation. A bird referable to this species was found standing on the shore at Hampton Beach 9 Jun 1933 by Miss Frances M. Abbott and 4 friends from Concord (*ASNH Bulletin* 12 [1]: 8–9). None of the 5 had ever seen an albatross before but they described a “huge bird” relative to gulls, an “enormous yellow bill with the tip curving downward and a hook at the end of it,” characteristic waddling gait, a short white tail, and tremendous wingspan when they flushed it off the beach and it flew a short distance and landed on the water. The speculation in the *ASNH Bulletin* article that it might have been a Yellow-nosed Albatross is contradicted by the description of the bill as all yellow. The NHRBC did not accept this record even as an albatross.

One reported 7 miles east of Hampton Harbor 25 Sep 1971 (R. Gilmore *fide* A.C. Borrer) was considered indeterminate as to species due to lack of sufficient details by the NHRBC. An adult was seen at Jeffreys Ledge 11 Jul 1976 (R. Heil, M.J. Kasprzyk, *et al.*; Veit and Petersen 1993), possibly the same bird as the 1 seen 1 Aug 1976, both near the Isles of Shoals and at Old Scantum the same day (S.A. Fogleman, P.A. Phipps *et al.*); this record was considered hypothetical by the NHRBC. Three accepted sight records for MA (Veit and Petersen 1993) and considered hypothetical for ME (ME-BRC website).

rarely in summer. The population increase in western European waters so well documented by Fisher (1952) reached New England waters by the 1960s (Veit and Petersen 1993); the first western Atlantic suspected breeding was in Labrador in 1972 (Finch 1972). More reports in 2006–2010 than in any other five-year period back to 1970 (Mirick 2011). Only occasionally seen from the mainland coast.

Fall. Reported most often September through November (Mirick 2011), presumably southbound migrants. The first known New Hampshire report is 10 seen and some photographed near Jeffreys Ledge 19 Sep 1971 (R.W. Smart, D.W. Finch *et al.*). A possible nonbreeding lingerer was on the inshore banks 3 Aug 2009 (M.G. Harvey). Earliest known fall dates are 1 off Rye 22 Sep 2002 (J. Smith, S. Lerman), 1 at Jeffreys Ledge 22 Sep 1994 (P.D. Hunt) and 1 at the Isles of Shoals 24 Sep 1983 (S.A. Fogleman *et al.*). Four light-morph birds and 1 dark-morph bird were in the Jeffreys Ledge area 14 Nov 1971 (R.W. Smart *et al.*). Birds have been found in October and November in most years when they have been sought since 1975. A notable count is 20–25 light-morph and 8–10 dark-morph birds at Jeffreys Ledge 12 Nov 1972 (ASNH field trip). A male collected at Jeffreys Ledge in Oct 1976 by H. Drake is in the UNH collection.

Winter. The known winter reports are 12 off the coast 3 Dec 2001 (J.W. Berry), 23 at Jeffreys Ledge 13 Dec 2009 (E.A. Masterson *et al.*), 25 there 17 Jan 2002 (D.J. Abbott), 140 there 6 Feb 2009 (S.R. and J. Mirick *et al.*), 18 there 9 Mar 2002 (S.R. Mirick, J. Lawrence), 1 there 14 Mar 2004 (S.R. Mirick *et al.*), and 12 there 15 Mar 2009 (E.A. Masterson). One was actually inside Hampton Harbor 22 Jan 2011 (J. Lambert; photo).

Spring and summer. Fifty-eight at Jeffreys Ledge 12 May 1979 (E.W. Phinney), 1 at White and Seavey Islands 15 May 2006 (D. and M. Hayward), 1 at the Isles of Shoals 21 May 1994 (I.C. MacLeod, D. Dick, A. Bunten), and 1 at Jeffreys Ledge 4 Jun 1982 (H.P. Nevers). Two thought to be at Jeffreys Ledge 12 Jul 2007 (J. Woolf), 19 at Jeffreys Ledge 5 Jun 2009 (E.A. Masterson) followed by 6, 3, and 1 respectively 4–6 Jul 2009 (L. Medlock, S.R. Mirick *et al.*), a season when unusual numbers of pelagic species were in the area. Very seldom seen from the mainland shore.

FAMILY PROCELLARIIDAE

Northern Fulmar *Fulmarus glacialis*

Status. First discovered in New Hampshire waters 1971; now a regular spring and fall visitor and winter resident,

Black-capped Petrel *Pterodroma hasitata*

Status. Vagrant from the Caribbean region; 1 record. An exhausted male was found in Chichester 31 Aug 1893 (H.W. Osgood) following a hurricane which also brought birds to VT, upstate New York, Virginia, and Ontario. The

specimen is now MCZ #291232 (Dearborn 1903; G. M. Allen 1903, 1909; J. A. Allen 1904; Forbush 1925; photo). Considered hypothetical for ME (ME-BRC website).

Cory's Shearwater *Calonectris diomedea*

Status. Uncommon visitor known between extreme dates of 26 June and 13 October. First state record in 1950, then not again until 1979. Rarely seen from the mainland shore.

1950 to present. Has been reported increasingly often in recent years, possibly due to both an increase in baitfish stocks in our offshore waters and, especially, increased frequency of offshore observations.

Records. The first report for New Hampshire waters is of a single bird seen flying south between the Isles of Shoals and the mainland 18 Aug 1950 (Taber 1950, 1955). Other August reports include 1 at Jeffreys Ledge 23 Aug 1984 (E.W. Phinney, R. Andrews), followed by 9 records scattered through September including the first documented record of 19 at Old Scantum 3 Sep 1979 (D.J. Abbott *et al.*; photos) and high counts of up to 110 at Jeffreys Ledge 3–8 Sep 1979 (D.J. Abbott, K.C. Elkins, E.W. Phinney) and 250 there 16 Sep 1979 (E.W. Phinney, S.A. Fogleman). Six records scattered through September including single birds seen from the mainland shore 17 Sep 1999 (A. and B. Delorey), 2 at Rye 6 Sep 1979 (E.W. Phinney), and 49 at Old Scantum 8 Sep 1979 (ASNH field trip). October offshore records are 102 on 7 Oct 1979 (R. Andrews, S.A. Fogleman), 1 on 10 Oct 2008 (T. Bronson), and 22 on 13 Oct 1979 (E.W. Phinney).

An unusual influx into New Hampshire waters began with 1 seen near Jeffreys Ledge 25 and 30 Jul 2008 (E.A. Masterson, M.G. Harvey *et al.*) and continued there through August to mid-September, peak count being 17 on 9 Aug 2008 (D.J. Abbott *et al.*). One was seen from Star Island 21 Sep 2008 (S.R. and J. Mirick). In 2009, another influx to Jeffreys Ledge and a few closer localities began with late spring and early summer records of 1 at Jeffreys Ledge 26 Jun 2009 (M.G. Harvey) followed by a total of 84 birds reported 4–14 Jul 2009 which included 40 there on 12 Jul 2009 (S.R. and J. Mirick *et al.*), 1 found 1 Aug (S.R. Mirick *et al.*), the peak being 280 at Jeffreys Ledge 16 Aug (E.A. Masterson), and the last being 1 there 11 Oct (S.R. Mirick *et al.*).

Great Shearwater *Puffinus gravis*

Status. Regular late spring migrant, occasional summer visitor, and regular early fall migrant offshore. Rarely seen from the mainland shore.

Early report. The first New Hampshire record is 1 taken near Portsmouth about 1900 and put in the collection of Mr. W. M. C. Philbrick of Kittery, ME, as reported by Dearborn (1903) and Allen (1903). The specimen is now lost.

1950 to present. Regular visitor to New Hampshire waters. As suggested by Griscom and Snyder (1955) and Veit and Petersen (1993) this species may pass northward off the coast in numbers in May.

Spring. Earliest available reports are 1 off Rye 2 Jun 2001 (A. and B. Delorey). Five other June reports of single birds offshore and at the Isles of Shoals until 34 at Jeffreys Ledge 23 Jun 1985 (E.W. Phinney) and 60 there 25 Jun 2009 (E.A. Masterson).

Summer into fall. Regularly found offshore and near the Isles of Shoals in July, numbers varying with the number of trips to the area and the availability of food resources in the area. Peak summer count was 250 at Jeffreys Ledge 30 Jul 2003 (M.G. Harvey, B. Griffith), and typical numbers have been in the 1–10 range before recent exceptional influxes. There were 200+ around Star Island 20 Aug to 7 Sep 2005 (S.R. Mirick, T. Wetmore). Its numbers typically build to a peak offshore from late July to early October. This pattern is illustrated as follows: 200–300 at Jeffreys Ledge 23 Aug 1984 (E.W. Phinney, R. Andrews), 37 there 8 Sep 1968 (R.W. Smart, D.W. Finch *et al.*), 300 there 13 Sep 1970 (R.W. Smart *et al.*), 900 there 8 Oct 1978 (D.W. Finch *et al.*), 60 off Star Island 26 Oct 1970 (D.W. Finch), 22 there 30 Oct 1970 (D.W. Finch), and 60 at Jeffreys Ledge 2 Nov 1982 (D.J. Abbott). The latest known fall records are 15 at Jeffreys Ledge 14 Nov 1971 (R.W. Smart *et al.*), and 2 near there 3 Dec 2001 (J.W. Berry, D. Green).

Occasionally seen from the mainland shore during easterly winds: 28 off Ragged Neck, Rye 21 Aug 1997 (A. Delorey); 20 off there 27 Oct 1997 (A. and B. Delorey); 122 seen off there 1 Nov 1997 (A. Delorey); 30 off there 23 Oct 1999 (A. and B. Delorey); an exceptional 601 off there 3 Nov 1999 (A. and B. Delorey); and 10 seen off Great Boar's Head 19 Nov 2009 (S.R. Mirick). An unusual report of 1 in the middle of Great Bay 5 Oct 1997 (S.R. Mirick, B. Whittaker).

A major influx of birds into nearshore waters occurred in fall of 2002, likely due to availability of unusual amounts of food. A total of 28 birds were seen near White and Seavey Islands and nearby 13 Aug (A.J. Vazzano, M. and R.W. Suomala *et al.*). Numbers built up rapidly to 900 in the Isles of Shoals area 21 Sep (S.R. Mirick *et al.*), 1000 off Great Boar's Head 27 Sep (S.R. Mirick *et al.*), 5900 off Hampton 28 Sep (A. and B. Delorey), 700 on 29 Sep off Seabrook (S.R. Mirick *et al.*), then tapering off to 49 off Ragged Neck 16 Oct (A. Delorey). Another modest influx in 2008 was reported in numbers from 3 to 8 intermittently from 4 Aug (E.A. Masterson) to 1 on 10 Oct (T. Bronson). A third major influx appeared at Jeffreys Ledge in Jul 2009 with counts ranging 50–200 and 1500 there 12 Jul 2009 (S.R. and J. Mirick *et al.*). Numbers rose from then to 4690 there 16 Aug 2009 (E.A. Masterson) and 3 were still present there 11 Oct 2009 (L. Medlock *et al.*).

Sooty Shearwater *Puffinus griseus*

Status. A regular late spring and summer visitor offshore, seldom lingering into fall and rarely in large numbers at any season. One suspect inland record. Rarely seen from the mainland shore.

Early and inland reports. First recorded for the state rather indefinitely as “a summer visitor off the coast” by Dearborn (1903). One captured near Hanover in “the late fall of 1919” (Marble 1923) was kept alive in captivity for a few days and then released. This is presumably the inland report alluded to by Forbush (1925); there is no indication that this bird was brought inland by a storm though that is certainly possible, the locality is not provably in New Hampshire, and the identification is suspect.

1950 to present. Earliest known records are twice on 24 May in 1964 off Portsmouth (ASNH field trip) and 1 at Rye in 2008 (S.R. and J. Mirick), next being 1 seen from shore at Hampton 28 May 2002 (M. Suomala, S.R. Mirick), 1 seen from shore at Rye 31 May 2008 (S.R. Mirick *et al.*), and 200 at Jeffreys Ledge 3 Jun 1973 (L.G. Phinney *et al.*), also the high known count for June. Occasional reports through June with evidence of some buildup in numbers offshore or near the Isles of Shoals by early July. In 2009 truly unusual numbers were near Jeffreys Ledge with numbers in the 200–225 range 3 times in the 4–12 Jul period. (L. Medlock, S.R. Mirick *et al.*). By 6 Aug 2009, numbers there built up to 2400 (L. Kras), 1960 on 16 Aug 2009 (E.A. Masterson), and 210 were still there 8 Sep 2009 (S.R. Mirick *et al.*). Late reports are 1 off Rye Harbor State Park 3 Oct 2009 (L. Medlock *et al.*) and 1 off the coast 24 Oct 2009 (S.R. Mirick *et al.*).

Manx Shearwater *Puffinus puffinus*

Status. Recently discovered in New Hampshire offshore waters; recorded frequently since first recorded in 1970. The first appearance off New Hampshire coincides with previously unprecedented numbers appearing in the Gulf of ME in Jul and Aug 1970, and discovery of the first breeding record for the western Atlantic documented at Penikese Island, MA, 6 Jun 1973 (Veit and Petersen 1993). See Post (1967) for a discussion of this species’s pre-1970 status in the northwestern Atlantic. Proved breeding at Matinicus Rock, ME, in 2008 (ME-BRC website). The shearwater most likely to be seen from the mainland shore.

1970 to present. The first state record was 1 studied carefully at close range about 4 miles off the entrance to Portsmouth Harbor 11 Aug 1970 (A.C. Borrer, M.R. Borrer). Over 35 other reports 1970–2009 between extreme dates of 1 off New Castle 2 May 1999 (S.R. Mirick) and 1 off the coast 24 Oct 2009 (S.R. Mirick *et al.*), both from land and on sea trips. Reports were intermittent 1970–1980, became more frequent 1981–1995, and have been

annual since, mostly in May and June and increasingly in July to mid-September, especially but not always after easterly storms. Peak counts are 15 near the Isles of Shoals 20 Aug 2005 (S.R. Mirick *et al.*); 15 seen from the beach at Seabrook 6 Aug 2008 (S.R. Mirick); 41 seen from Star Island 7 Sep 2005 (T. Wetmore); 70 at Jeffreys Ledge 16 Aug 2009 (E.A. Masterson) and 67 there 8 Sep 2009 (J. Lambert); usual numbers seen have been in the 1–8 range. Several birds were seen in the exceptional influx of shearwaters into nearshore waters in fall 2002 and 2009: 1 near the Isles of Shoals 21 Sep 2002 (S.R. Mirick, R. Heil *et al.*), 4 off Ragged Neck 24 Sep 2009 (S.R. Mirick), 1 off Rye 3 Oct 2009 (L. Medlock *et al.*), 2 off Ragged Neck 12 Oct 2002 (A. and B. Delorey), and the 24 Oct 2009 report mentioned above.

FAMILY HYDROBATIDAE

Wilson’s Storm-Petrel *Oceanites oceanicus*

Status. Regular spring and fall transient from the southern hemisphere, common in offshore waters in the summer months. Three inland records. Irregular, but sometimes seen from the mainland shore in numbers.

Early reports to 1950. What was almost certainly this species was first recorded for New Hampshire by Belknap (1792) on the authority of a Mr. Peck who called it the “Petteril, *Procellaria pelagica*,” using the specific epithet of the very similar European Storm-Petrel *Hydrobates pelagica*. This species was listed by Dearborn (1903) as “not uncommon off our coast,” undoubtedly correct though he provides no supporting evidence for this statement other than a single specimen in the collection of Mr. W. M. C. Philbrick of Kittery, ME, which may or may not have been taken in New Hampshire waters. Allen (1903) called it a “common summer visitor off the coast” on the basis of observations by William Brewster in Jun 1881 who saw birds between Portsmouth and the Isles of Shoals 11 Jul 1884. Wright (1937) wrote that “[p]etrels of this species were seen rather irregularly throughout the summer of 1935 (near the Isles of Shoals), although in 1936 only 1 was seen. In 1935 the first bird was seen between the islands and Portsmouth on June 18, and the last was seen on August 17 off to the east of the islands. On August 15 a trip was made some 5 miles to the east of the islands; several hundred individuals were seen in the course of the day and a specimen was taken. Throughout the summer of 1935 whales were abundant about the islands, but in 1936 whales were very scarce. This fact alone may be responsible for the scarcity of the petrel. On June 24, 1936, the only bird of the summer was seen flying off Square Rock.”

1950 to present. Common seasonal visitor. Numbers

have increased 2000–2009, perhaps due to changes in available food supply.

Spring and summer. Earliest known spring arrival dates are 2 at White and Seavey Islands 18 May 2007 (D. and M. Hayward), 16 at Jeffreys Ledge 25 May 2009 (S.R. and J. Mirick *et al.*), 1 off Portsmouth 20 May 1988 (T.H. Arter, A.C. Borrer *et al.*), and 40 at Jeffreys Ledge 21 May 1994 (I.C. MacLeod *et al.*). Numbers often build up rapidly by early June: 250 at Jeffreys Ledge 1 Jun 1969 (R. W. Smart *et al.*), 1000+ there 3 Jun 1973 (L.G. Phinney *et al.*), 700 there 6 Jun 1971 (R.W. Smart *et al.*), about 2000 there 8 Jun 1980 (T. Richards, R.A. Quinn), 1800 there 6 Jul 2009 (S.R. and J. Mirick), 1030 seen from the mainland coast 9 Jul 2005 (S.R. Mirick), and several other counts of 100 or more between 30 May and 1 July. Occasionally present in mid- to late summer in large numbers: 470+ offshore 15 Jul 1985 (E.W. Phinney *et al.*), 350 offshore 25 Jul 2008 (E.A. Masterson), 300 at Old Scantum 3 Aug 1976 (E.W. Phinney *et al.*), and 500+ at Jeffreys Ledge 23 Aug 1984 (E.W. Phinney, R. Andrews).

Numbers occurred in inshore waters from early Jun to early Aug 2003; counts in the 100–200 range were recorded several times from the mainland coast and the Isles of Shoals and peak numbers were 457 off the coast 24 Jul 2003 (S.R. Mirick) and 473 there on 2 Aug 2003 (S.R. Mirick *et al.*). Another such influx occurred 8 Jun to late Aug 2004; several counts from shore were in the 250–400 range and peak counts were 1585 on 15 Jul (M.G. Harvey) and 1392 on 15 Aug (S.R. Mirick *et al.*).

Not often noted at the Isles of Shoals at this season except after storms even though known to occur in large numbers only a few miles east of there. Unusual conditions in Aug 2001 brought numbers close enough to be visible from the mainland coast. Seven reports in the 3–31 Aug period averaged about 30 each time with high counts of 100 and 225 on 12 Aug by separate observers (A. and B. Delorey, S.R. Mirick *et al.*). Counts near the Isles of Shoals 15–20 Aug 2005 peaked at 350 on 16 Aug (B. Griffith). Another influx occurred in offshore waters in 2009: 496 at Jeffreys Ledge 8 Aug (L. Tanino *et al.*) rising to 1000 there 16 Aug (E.A. Masterson) and 1500 at Cashes Ledge 18 Aug (E.A. Masterson).

Fall. Two hundred fifty were at Jeffreys Ledge 8 Sep 2009 (S.R. Mirick). One seen off Little Boar's Head, North Hampton 27 Sep 2009 (S.R. Mirick) is the latest known fall record, though reports up to a month later would not be surprising since stragglers have been found in MA waters into November (Veit and Petersen 1993).

Inland reports. One was captured alive at Squam Lake 28 Aug 1971 after passage of Hurricane Doria (O. Dworkin, H. Coolidge) but later died (specimen #4023-B at UNH). One was seen in Little Bay, Newington, 10 Aug 1976 (D.J. Abbott), and 1 was found dead in Hebron 11 Aug 1976 (E. Stanwood *fide* V.H. Hebert) right after

the passage of a hurricane. One was found at Dublin Lake 28 Aug 1971 (T. Warren).

Leach's Storm-Petrel *Oceanodroma leucorhoa*

Status. Regular spring migrant, regular summer visitor, and regular fall migrant well offshore. Now unknown to breed, though it probably did so in precolonial and colonial times at the Isles of Shoals; still breeds commonly along the ME coast within 55 miles of the New Hampshire state line. Casual inland after storms.

Early reports to 1950. One was taken at Hampton in Oct or Nov 1898 (S.A. Shaw). Inland, 1 was taken at Alstead 29 Sep 1887 (Allen 1903; not 1897 as published incorrectly); the specimen was still in the Acworth Free Public Library collection in 1972 (Keith 1974). Two seen, of which 1 was shot, at Blood's Pond, Lancaster, 1 Oct 1897 and shown to F. B. Spaulding (1898a). One was shot on the Oyster River, Durham, in Nov 1898 and shown to Dearborn (1903). One was collected at Lake Massabesic, Manchester, 4 Oct 1899 (Batchelder and Fogg 1899), and another was seen there after an easterly storm 18 Sep 1903 (Goodhue 1922). Allen (1903) called it "a common summer and autumn visitant off the coast." Lord (1918) records a specimen taken "in Hanover or its immediate vicinity" in the 1912–1918 period but provides no specific date or evidence that the bird might not have been shot in eastern VT. Goodhue (1922) lists 1 killed by a cat in Winchester on 17 Sep 1903 after an easterly storm. One was found in Winchester about 1923 after a tropical storm by L. R. Nelson; it was given as a mounted specimen to the Northfield–Mt. Herman School but was lost in a fire there in 1965. After the great hurricane of 1938, single birds were found 22 Sep on the Connecticut River at Hanover (R.L. Weaver) and on 23 Sep at Bow Lake (W.H. Colby) (Eliot 1939).

1950 to present. Earliest known spring arrival is 5 at Hampton Harbor 16 Apr 2007 (E.A. Masterson, S.R. Mirick *et al.*) after an easterly storm. It arrives offshore regularly by early May on its way to breeding colonies on the ME coast, the nearest of which are about 55 miles away in Casco Bay (Palmer 1949). Migration is thought to be over by late May or early June, about the time 3 were found at Jeffreys Ledge 7 Jun 1970 (R.W. Smart *et al.*). A few spend the summer offshore as is suggested by reports near the Isles of Shoals 30 Jul 1960 (A. Lincoln), 1 there 3 Jul 2004 (B. Griffith), and 1 near the mouth of the Piscataqua River 19 Jul 1985 (E.W. Phinney). Regular in summer at Cashes Ledge. Southbound migrants are believed to be present offshore from mid-August to late September with peak numbers in mid-September. A possibly sick or storm-blown bird was found in Portsmouth Harbor 25 Sep 1966 (R.W. Smart *et al.*), 1 was seen at Seabrook Harbor 6 Oct 1995 (A. and B. Delorey), 4 were blown in by a storm to North Hampton 13 Oct 2005

(S.R. Mirick), 1 was found at Great Bay 15 Oct 1994 (S.R. Mirick, P.D. Hunt), and 2 were found there 1 Oct 2001 (S.R. Mirick). Latest known report is 1 at Seabrook 26 Oct 1993 (R.A. Woodward). Numbers are thought to decline from early October to late November. There are no known winter records.

Inland. All such reports have followed strong easterly storms or hurricanes. One caught alive at Hooksett 31 Aug 1954 (G.P. Baker *et al.*) was later released at Sea-

brook; 1 photographed by G. LeBaron at Squam Lake 11 Aug 1976 (ASNH *Newsletter* 12 [6], Sep 1977); and 1 seen on Lake Winnepesaukee 2 Nov 1997 (K. Mills, W. Rasku), the latest known record for the state. Reports of storm-petrels unidentified to species at Manchester 26 Oct 2000 (K. Neville, H. Dalbeck) and at Little Squam Lake 19 Sep 2004 (J. and S. Kabat) very possibly belong here.

ORDER PHAETHONIFORMES

FAMILY PHAETHONTIDAE

White-tailed Tropicbird *Phaethon lepturus*

Status. Vagrant from the south. One blown inland by Hurricane Irene was picked up alive in Claremont in the Connecticut River valley 30 Aug 2011 and taken to a sanctuary at Lyme where it died (*fide* C. Greenleaf). Deposited at AMNH (#837932). There is 1 record for VT in the Connecticut River valley from the 1938 hurricane, at least 8 records for MA (Veit and Petersen 1993, BO database 2011), and 3 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Red-billed Tropicbird *Phaethon aethereus*

Status. Vagrant from the south. One record. One flying past Lunging Island in the Isles of Shoals 23 Jun 2009 (D. Hayward; photo NHBR 28 [2] back cover). In recent years there have been several sightings in the northeast: 1 at Martha's Vineyard, MA, in each of 1986–1989, Rhode Island (1973, 1975, 2008), and 1 near Matinicus Rock and Seal Island, ME, in summers of 2005–2011. Probably the same bird was at Seal Island 19 Jun 2009 just before and just after being observed in New Hampshire.

ORDER CICONIIFORMES

FAMILY CICONIIDAE

Wood Stork *Mycteria americana*

Status. Vagrant. Hypothetical. One record, an adult bird reported by Forbush (1925) as taken at Lancaster in the spring of 1922 as related to him in a letter from Miss

Addie Inez Howe. The specimen was apparently not preserved. All other published accounts of this species in the state are, as noted by Allen (1909), erroneous references to Glossy Ibis. One specimen record for VT in 1898 (C.C. Rimmer pers. comm.), at least 8 records for MA (Veit and Petersen 1993, BO database 2010), and 5 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

ORDER SULIFORMES

FAMILY SULIDAE

Northern Gannet *Morus bassanus*

Status. Regular spring and fall migrant along the coast and at the Isles of Shoals, occasionally in numbers. A few usually winter offshore or linger there in summer. Accidental inland after storms.

Early reports to 1950. First reported for the state by Belknap (1792). Dearborn (1903) considered it a fall migrant that sometimes occurred through winter to early spring. Allen (1903) called it a “spring and fall migrant off the coast.” If it was present in New Hampshire coastal waters 1936–1949, it went virtually unreported; all known records are 1 off Rye 23 Jul 1938 (*fide* Collins), 1 at Hampton Falls 23 Feb 1948 (N.C. Nash *et al.*), and 10 at

the coast 22 Nov 1949 (T. Richards). Jackson (1947) reported it only a few times in summer at the Isles of Shoals 1937–1947, usually near the end of summer. The foregoing and 2 inland records below constitute the entire known published record prior to 1950.

Inland, Wright (1911) and Eliot (1939) both mention an immature that lit on a barn in Jefferson 13 Oct 1910 after a severe northeast storm. It was later collected and carefully examined by F. B. Spaulding but not preserved. Weaver (1941a) reports an immature caught alive at Hanover 24 Oct 1940 in a weakened condition. It was nursed back to health, banded, released, and remained in the area until 2 Nov when it left, only to be shot by a hunter at Lake Hartland, VT, on 5 Nov. It is now in the Dartmouth College collection (#40-38-2338).

1950 to present. Significant increase in reports. Northbound migration presumably passes largely offshore; southbound counts are much higher than in spring.

Spring. The first spring migrants usually appear by mid-March. One at Hampton 6 Mar 1969 (D.J. Abbott) could have been a wintering bird or a very early spring migrant. Typical peak migration period is the last week of April and the first week of May, varying slightly from year to year. Peak spring counts are 189 at White and Seavey Islands 28 Apr 2002 (D. Hayward *et al.*) and 400 seen off Rye 26 May 2005 (J.P. Smith) during an easterly storm. Migration is essentially over by late May, but numbers up to the 15–30 range have been recorded into mid-June several times in recent years, an unusual late peak count being 67 at White and Seavey Islands 13 Jun 2007 (D. and M. Hayward *et al.*).

Summer. Single birds off Hampton 28 Jun 1972 (A.C. Borrer) and 30 Jun 1970 (D.J. Abbott) are probably too late to be considered tardy spring migrants. Jackson (1947) described this species' status at the Isles of Shoals in July and August as follows: "During the past ten years Gannets have been seen in the summer only a few times. They usually appear the last of the season, though an injured bird was reported from [Luning] Island the first of July 1938." One bird also found at the "Shoals" 12 Aug 1956 (M. Halberg, W. Taber). Since 1990 it has become regular along the coast and offshore mid-July to late August, usual numbers in the 1–9 range, though 64 were off Rye 14 Jul 2004 (J.P. Smith). Exceptional numbers were along the coast and offshore in June and July 2009, peak counts being 168 off North Hampton 24 Jun 2009 (S.R. Mirick) and 100–110 at Jeffreys Ledge 4 and 5 Jul 2009 (L. Medlock, S.R. Mirick *et al.*).

Fall. First arrival of migrants is obscured by the presence of summering birds through August. Peak fall migration period is the last 3 weeks of October and the first week of November. Especially during periods of high easterly winds, large numbers are occasionally recorded both at the Isles of Shoals and from the mainland: 1898 were ob-

served from Ragged Neck surprisingly early on 29 Sep 1997 (A. Delorey *et al.*) followed by 1500 off Ragged Neck only 5 days later on 4 Oct 1997 (A. Delorey *et al.*). Off Star Island, 966 were seen 26 Oct 1970 (D.W. Finch *et al.*); at least 5000 birds were seen passing the coast off Pulpit Rocks in Rye 21 Oct 1995 between 08:00 and 13:00 (A. Delorey, ASNH field trip), and 1092 were seen off Rye 28 Oct 2006 (S.R. and J. Mirick). Another major flight from 18 Sep to 2 Nov in 2002 averaged 200+ seen per day with a peak of 600 on 12 Oct 2002 (A. and B. Delorey). From mid-November numbers usually decline until late December after which only a few winter stragglers remain; highest known CBC total is 18 at the Isles of Shoals in Dec 1982.

Winter. There are several late January and early February records of single birds and occasional midwinter reports of small groups, the most notable of which are 9 near Jeffreys Ledge 30 Jan 1972 (R.W. Smart *et al.*) and 15 off Hampton 14 Jan 2006 (S.R. and J. Mirick).

Inland. One appeared at Laconia 2 Jan 1954 (M. Kendrick); 1 in Claremont 6 Nov 1991 (R. Leavitt); and a juvenile found dead at Alton 1 Nov 2006 (K. Taylor, J. Cooley), all after easterly storms.

FAMILY ANHINGIDAE

Anhinga Anhinga anhinga

Status. Three reports considered hypothetical for lack of 3 observers. One at Stratham 14 May 2001 (D.J. Abbott), 1 at Chester 19 May 2004 (A. Delorey), and 1 at Portsmouth 17 May 2005 (A. Delorey). One hypothetical record for VT (C.C. Rimmer pers. comm.) and 5 records for MA (Veit and Petersen 1993, BO database 2010).

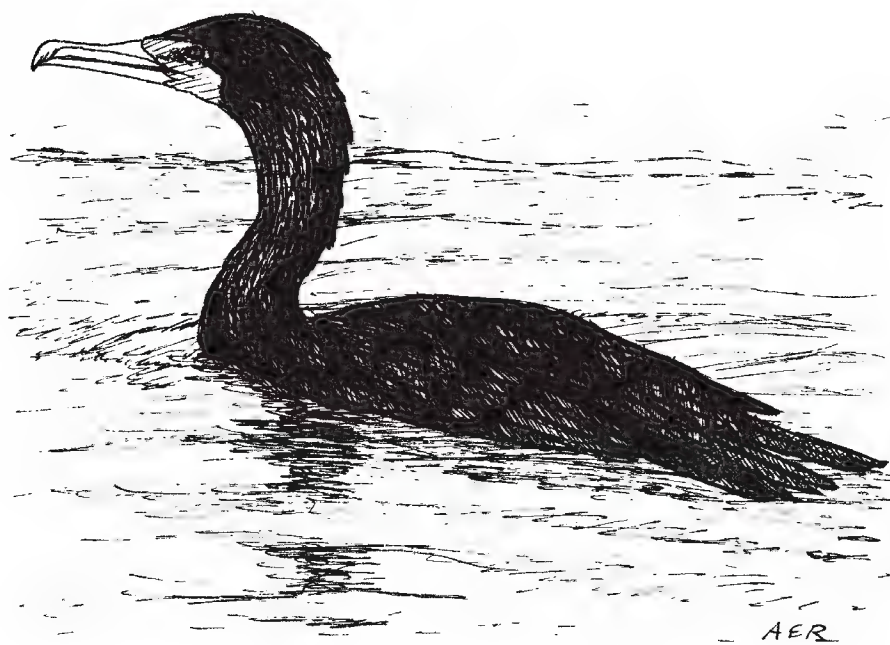
FAMILY PHALACROCORACIDAE

Double-crested Cormorant Phalacrocorax auritus

Status. Regular spring and fall migrant, common to abundant at the coast and at the Isles of Shoals, in much smaller numbers along the 2 major river valleys and at major lakes inland. Regular summer resident on salt water, only comparatively recently beginning to breed at the Isles of Shoals; regular summer visitor inland. Greatly increased since 1900.

Early reports to 1950. The record by Belknap (1792) of the "Shag, *Pelecanus graculus*," probably refers to this species rather than the Great Cormorant based on its size similarity to European Shag *Phalacrocorax aristotelis*, but there is no way to be sure. A photograph of 1 taken at

Hampton appears in Dow (1893). It was much less common about 1900 than it is today, having declined sharply since colonial times. The species nested commonly along the coast in the precolonial era and was harvested from offshore islands by the indigenous people; it was slaughtered all along the New England coast for oil and fish bait in the late 1800s (Borrer 1980), and Samuels (1867) knew of no breeding population south of Labrador. Dearborn (1903) describes it as a frequent fall migrant to Great Bay but “[u]sually not more than two or three appear there at a time, though in October, 1900, a flock



of about 40 came and stayed there several days. On the coast they are more abundant, but only in autumn as in spring they are not seen.” Allen (1903) called it a “spring and fall migrant on the coast [and] casual inland,” providing a record on the Connecticut River at Plainfield in Oct 1897. Forbush (1925) mentions an inland summer straggler collected at Kingston 10 Jul 1891, but otherwise did not describe the species’s status in the state. It was not even mentioned by Brewster (1924) for Lake Umbagog, Wright (1911) for the Jefferson region, White (1924b, 1937) for the Concord area, or Dearborn (1898, 1905) for Belknap and Merrimack Counties or Northfield.

Beginning in the 1930s, records for this species increased sharply. Wright (1937) reports for the Isles of Shoals that in the summer of “1936 this species was more abundant than in 1935. In 1935 cormorants were seen rather irregularly, but in 1936 birds were seen nearly every day...Birds in both immature and adult plumage were observed. On October 5, 1935 this species was very abundant.” The first record for Lake Umbagog was made 17 Sep 1936 (G.L. Perry), a bird reported to have been present all summer (Griscom 1938). Four were at Rye 21 Jul 1938 (J.A. Collins). One was seen at Dixville Notch 20 Sep 1938 (C.H. Rogers), 1 was at Chocorua Lake from about 14–24 Sep 1939, and 3 were there 1 Oct 1939 (Lincoln 1940).

One was at Tamworth 15–18 Sep 1939 (K. Peabody), and 45 were seen at the New Hampshire Isles of Shoals 19 Jul 1940 (E. Mason, N.C. Nash). In the 1940s numbers seen steadily increased, especially along the coast but also inland. Sixteen were found at Hanover 21–22 May 1942 (Mrs. C. Campbell), 10 were seen migrating in small flocks at Monroe in the 3–13 May period 1947 (R.A. Emery *et al.*), single birds were found at Pittsburg 15 Sep 1947 (T. Richards) and 2 Jun 1948 (F.T. Scott), 1 was at New Hampton 15–17 Oct 1948 (V.H. Hebert), and 1 was at Laconia 3 Nov 1949 (T. Richards). Palmer (1949) documents its parallel great increase in coastal ME in 1925–1945 from great scarcity in 1900. In short, this species has reclaimed its probable precolonial range and numbers since the 1930s.

1950 to present. Continuing pattern of rapid increase; much more abundant in fall than spring. Breeding population listed as increasing by Hunt (2009b).

Spring. Earliest known spring arrival is 1 inland at Manchester 2 Mar 1999 (L. Deming, M. Johnson) which may have lingered through the winter nearby; otherwise the earliest is 2 at Newington on Great Bay 19 Mar 1970 (E.W. Phinney). Peak migration period both at the coast and inland is from the last week of April through the third week of May, by which time late migrants on salt water become indistinguishable from summer residents there. Peak spring counts have grown from 300 on 15 Apr 1961 (R.W. Smart) at the coast to 800 between Rye and Seabrook 16 May 2001 (R.W. Suomala, A. and B. Delorey) to 1419 at the coast 30 Apr 2007 (T. Bronson). Inland, peak count is 325 at Littleton 27 Apr 1995 (P. Powers, E.A. Emery) though usual numbers are in the 1–10 range, and latest apparent migrant is 1 at New Hampton 9 Jun 1969 (L. Emmons *et al.*). Birds arrive and establish nest sites at the Isles of Shoals by late March.

Summer and breeding. Counts of 50 or more along the coast are routine in summer. In the 1950s and 1960s, inland records were sporadic: 2 at Squam Lake 18 Jul 1953 (T. Richards), 1 at New Hampton 30 Jul 1958 (V.H. and R.C. Hebert), and 1 at Bristol 7–15 Aug 1969 (L. Emmons, R.W. Smart). Since the 1990s it has become regular inland in summer throughout the state from the MA border to Pittsburg, occasionally in numbers in the 5–15 range: 12 at Charlestown 26 Jul 2004 (M.G. Harvey), 13 birds reported from 6 inland localities 13 Jun to 21 Jul 2005 (v.o.), and 16 at Dummer 2 Jun 2000 (R.A. Quinn).

Though this species began nesting on the ME islands of the Isles of Shoals by the early 1940s (Gross 1945), the colony growing rapidly through the 1970s and early 1980s to 1600 pairs in 1985 (A.C. Borrer *in* Foss 1994), the first known breeding record for New Hampshire was 44 nests at Square Rock, Isles of Shoals, in Jun 1972 (A.C. Borrer). By 1986 the Square Rock colony had grown to 80 pairs (Foss 1994) and reached about 150 pairs in 1998.

Occasionally a pair or 2 nested on nearby Lunging Island (*cf.* 1986) but the principal nesting locality was on White and Seavey Islands until the tern restoration program was started there in 1997. After this, both the gulls and cormorants were displaced and the latter moved their nesting activities to Lunging Island where there is now a significant colony of about 100 pairs. Numbers in the 30–60 range were present at White and Seavey Islands in Jun and Jul 2000 (D. Hayward *et al.*) but were not nesting there. There has been a significant colony nesting on Duck Island, ME, for over 30 years. The only known nesting away from the Isles of Shoals is an adult with 2 chicks in Little Bay at Durham 29 Jun 1998 (S.R. Mirick, D.L. De Luca, R. Hughes). No breeding has yet been documented on inland lakes though numbers of presumed nonbreeding birds in the range of 15–25 are regularly found on such lakes as Squam (R.S. Ridgely pers. comm.) and Winnepesaukee (R.A. Quinn pers. comm.). Though no breeding colonies are included on BBS routes, BBS data show a small population trend increase in both 1966–2009 and 1999–2009 (Appendix IV).

Fall and winter. Migration often begins in early August at the coast: numbers in the 15–220 range have been noted flying south 3–11 August in 2007–2010 (S.R. Mirick). Peak of the coastal migration is usually in the first 2 weeks of October. An early high fall count was 800 at Rye Beach 2 Oct 1950 (J. Belden). Counts over 1000 in a day have been made at the coast at least 20 times since 1960, the highest of which are 5806 at North Hampton 12 Oct 2005 (S.R. Mirick), 7104 observed in 3 hours 26 Sep 2010 (S.R. and J. Mirick), and 7117 on 7 Oct 2007 (S.R. and J. Mirick). A total of 13,400 were counted passing the coast 19 Sep through 19 Oct 2008 (S.R. and J. Mirick). There are frequent coastal records for early November and occasional reports to mid-December. Latest record on salt water is 1 at Portsmouth 6 Jan 2004 (B. Griffith).

Fall migration inland begins by mid-August to early September: 27 at Monroe 17 Aug 1998 (E.A. Emery, P. Powers) and 23 at Hinsdale 26 Aug 2006 (E.A. Masterson). Peak inland fall count is 300 at Pittsburg 5 Oct 1962 (F.T. Scott) though counts over 15 are very unusual. Migration inland is usually over by mid-October. Latest inland fall migrant date is 1 at Auburn 18 Dec 2004 (I.C. MacLeod). Winter records are 3 found at Nashua–Hollis (CBC) on 2 Jan 1993, 1 at Laconia 1 Jan 1994 (CBC), 2 at Manchester 9 Feb 2009 (E.A. Masterson *et al.*), and 1 at Merrimack 16 Feb 1995 (R. Andrews). The migration route from the New Hampshire coast southward in New England is discussed at length by Nisbet and Baird (1959). Elevation record for the state is 3 at 3300 feet in Carter Notch in the White Mountains 7 Oct 2011 (E. Chubb *fide* D. Govatski).

Great Cormorant *Phalacrocorax carbo*

Status. Now a regular spring and fall coastal migrant, moderate numbers usually wintering along the coast or at the Isles of Shoals, and a few regularly summering, especially at the Isles of Shoals. Formerly much scarcer; no New Hampshire records were known to Dearborn (1903) or Allen (1903) though specimens were taken in both ME and MA before 1900. Since then its abundance in New England has increased greatly. Annual in small numbers inland.

Early reports. Forbush (1925) reported it to be an uncommon migrant and winter resident in ME, MA, and Rhode Island; to reach the first 2 states it had to pass through New Hampshire waters though Forbush had no records from there. The only known early summer report is 1 at the Isles of Shoals 28 Jun 1929 (Jackson 1947), the exact state not noted. The first certain record for the state appears to be 7 in the Piscataqua River, Portsmouth, 7 Feb 1948 (T. Richards), followed by 3 at Newcastle 8 Jan 1949 (T. Richards). This is the entire published record for the state before 1950.

1950 to present. Significant increase in this period.

Fall and winter. Earliest known fall coastal arrivals are obscured by the presence of summering birds. Peak southbound migration period is usually the last 2 weeks of October and the first 2 weeks of November, though peak coastal counts have usually been recorded around year-end, often on the Coastal CBC: 55 in 1986 and 1987, 76 in 1985. Mean Coastal CBC numbers were 10 in the 1950s, 4 in the 1960s, 25 in the 1970s, 41 in the 1980s, 24 in the 1990s, and 39 in the 2000s. Usually winters in moderate numbers at the Isles of Shoals: 49 there on 29 Dec 1971 (L.G. Phinney *et al.*). Wintering numbers are highly variable as might be expected along so short a coastline, ranging from nearly none in January and February (1960, 1969) to numbers in the 25–30 range (1957, 1967, 1990, 1999, 2001).

Earliest fall inland records are 1 at Rochester 15 Aug 2009 (S.R. Mirick) and 1 immature there 19 Aug 2010 (S.R. Mirick). Occasional migrants inland from mid-September to early December: 1 at Laconia 30 Nov 2008 and 1 at Hinsdale 2 Dec 2007 (both E.A. Masterson). One was killed by a car at Wentworth 9 Jan 1976 (H.M. Van Deusen). At least 10 winter records inland in each of January and February as far north as Laconia but more often in the lower Merrimack and Connecticut River valleys, usually in numbers of 1–3 but a peak count of 12 at Manchester 4 Feb 2005 (I.C. MacLeod).

Spring and summer. Northward migration usually begins in early March, and peak migration period is usually the last week of March and the first 2 weeks of April, the period varying slightly from year to year. Peak spring count is 37 at Rye Ledge 13 Mar 1966 (B. Crowley). Isles

of Shoals records are 2 at Star Island 18 May 2008 (E.A. Masterson *et al.*), 1 there 30 Jun 1988 (L. Harper), 1 at Lunging Island 1 Jun 2008 and 2 there 6 Jul 2008 (both E.A. Masterson), 1 at Square Rock 11 Jul 1993 (S.R. Mirick *et al.*), 1 there 22 Jul 1995 (S.R. Mirick), and 6 there 9 Jul 1998 (R.A. Quinn, J. Ellis). Now occurs irregularly at White and Seavey Islands in summer: 3 Jul 2006, 5 Jul 2002, 12 Jul 2007, 13 Jul 2000, 27 Jul 2003, 31 Jul 2001, and 4 Aug 1999 (all D. Hayward *et al.*); 1 at Lunging Island 13 Aug 2002 (M. and R.W. Suomala), 2 at Jeffreys

Ledge 15 Aug 2009 (L. Kras *et al.*), and 2 at Square Rock 16 Aug 2009 (L. Medlock).

Inland in spring, earliest known reports are 1 Tilton 11 Mar 2001 (J. Williams), 1 at Hooksett 25 Mar 2005 (T. Bronson) and often by the first week of April. Occasional transients from then to May and early June. Later records are 1 at Nelson 16 Jun 1993 (K. Kotila, L. Acher), 1 at Lyme 20 Jul 1996 (D. Crook), and an immature at Strafford 21 Jul 1994 (A. Kimball).

ORDER PELECANIFORMES

FAMILY PELECANIDAE

American White Pelican *Pelecanus erythrorhynchos*

Status. Probably occurred fairly regularly in precolonial times; very rare since 1900: 7 records.

Early reports to 1950. Noted as occurring in New Hampshire by T. Morton (1632); his comment was repeated by Allen (1876) who in turn was cited by Stearns (1887). Belknap (1792) stated that “[t]he Pelican migrates from its native country, the Mississippi, far to the northward. It has been seen in New-Hampshire.” He considered it a race of the Great White Pelican *P. onocrotalus*, clearly indicating a white bird. Allen (1903, 1909) cited Belknap and hypothesized, probably correctly, that this species occurred more frequently in New England generally in precolonial and colonial times.

1950 to present. At least 9 individuals. One was videotaped while feeding in Great Bay 1–3 May 1996 (D. Fotiades). Two well-described birds were seen at Wolfeboro 11 Jun 1997 (M. Kott, L. Wilberton *et al.*). One seen at Harris Pond, Pelham, 23 May 2000 (D. Hunt) was probably the same bird seen previously at nearby Flint Pond in Tyngsboro, MA. One at Manchester 18 Dec 2004 (R. Tulloh) was probably the same bird found at Hollis 18–20 Dec 2004 (C. Beaudry). One at Portsmouth 21 Oct 2006 (K. Ciborowski *et al.*) may have been the same bird seen at Newmarket 10 Dec 2006 (A. Wood). Three seen flying in off the ocean together at Concord Point 3 Nov 2012 (J. and S.R. Mirick; photo). One at Appledore Island, Isles of Shoals, 3 May 2002 (A.C. Borrer) must have passed through New Hampshire waters to reach there (Perkins 2002). Seven accepted records for VT (C.C. Rimmer pers. comm.), 9 records for ME (ME-BRC website), and of nearly annual occurrence in MA since 1983 (Veit and Petersen 1993, BO database 2010).

Brown Pelican *Pelecanus occidentalis*

Status. Vagrant from the south; 3 records. A skeletal spec-

imen in the MCZ (#413) was collected at Newfound Lake by J. W. Guernsey, “sometime after 1878 and almost certainly well before 1900, perhaps even in the 1880s” (R.A. Paynter, Jr., *in litt* to A.R. Keith 1 Mar 1977). An immature was shot at Great Boar’s Head, Hampton Beach, 1 May 1907. It was mounted by a Mr. Damsell and later bought by Col. John E. Thayer for his collection. Still later Thayer gave it to the BSNH whose collection became the nucleus of the MOS collection where it is now (MOS X03.176). A bird found dead at Great Bay National Wildlife Refuge on 7 Jan 2007 by T. Hazelton carried USFWS band #938-57447 and had been banded as a pre-flight young bird at Holland Island, Maryland, in Chesapeake Bay. Over 10 records for ME (ME-BRC website, P.D. Vickery pers. comm.) and at least 23 records for MA (Veit and Petersen 1993, BO database 2011).

FAMILY ARDEIDAE

American Bittern *Botaurus lentiginosus*

Status. Regular but uncommon spring migrant, uncommon and increasingly local summer resident and breeder, and regular and occasionally common fall migrant. At least 1 overwintering record. Has declined noticeably since 1900, particularly since 1960.

Early reports to 1950. The first known New Hampshire records are those of Brewster (1924) at Lake Umbagog in 1871–1909. He found it a common breeder there 1871–1876, especially in the marshes near the mouth of the Cambridge River, but after that it became “of rare occurrence, except in autumn when it occurs regularly and rather commonly.” He attributed the decline specifically to “wanton” shooting by hunters, who exterminated it as a breeder there by 1880. His extreme dates at the lake were from 9 May to 23 October. Maynard (1871) also mentioned it breeding at the lake earlier, but Griscom (1938) said it no longer bred there by 1936.

Samuels (1867) considered it common in the state, Shaw (1885a) shot 1 at Hampton 11 Dec 1881 which had a wing that had been broken but which had completely healed. Dearborn (1898, 1905) reported it a “common summer resident wherever there are marshes” in Belknap and Merrimack Counties and in Northfield from “quite early in spring...until October or November.” Dearborn (1903) also reported it common as a breeder in marshes in the Barrington–Lee area and as a migrant in the coastal salt marshes from April until 14 October. Allen (1903) considered it a “not uncommon summer resident...throughout the state,” and specifically mentioned it as present in summer in the Saco River valley at Intervale. Comey (1904) reported it regular in summer at Holderness. Porter and Porter (1904) found 1 breeding at Intervale, and G. Thayer (1912) found it uncommon near Dublin though it had been “quite common” a few years earlier. Wright (1911) was the first to call it an “uncommon summer resident” in the Jefferson region, found between extreme dates of 28 May and 27 September, but apparently breeding only in the Davis Swamp, Lancaster. Goodhue (1877a) called it a “common summer resident” in the Webster area, probably breeding. White (1924b) called it a “regular summer resident in suitable localities” only a few miles away in the Concord area but did not suggest that it was common. Thirteen years later, White (1937) called it a “regular but not numerous summer resident” at Concord and said that it had ceased to breed at Big Turkey Pond in 1936. His extreme dates for the area were from 7 Apr (1916) to 15 Oct (1931). Reports to RNEB give it as a migrant inland in most years 1936–1949 in April in spring and in September and October in fall; no mention of breeding though it must have been occurring. Allan (1931) reports 1 at the Isles of Shoals 6 Oct 1929 without indicating in which state it was seen.

The above reports provide opinions of the species’s status at widely separated times and localities, but a picture emerges: this species was probably reasonably common statewide from the precolonial and colonial periods until about 1880, especially in the north, at which time a decline began which persisted into the 1930s and 1940s.

1950 to present. Continued decline observed, especially since 1960. Population trend considered decreasing by Hunt (2012).

Spring. Extreme known early arrival is 1 as far north as Littleton 24 Mar 1969 (R.J. Bradley) which was so weak it did not survive. Otherwise the earliest known arrival is 1 at Canterbury 4 Apr 1991 (R.A. Quinn). Mean spring arrival date 1951–2009 was 15 April, and the peak of spring migration is typically the last 2 weeks of April. Peak spring count in a day is only 5 at the coast 14 May 1961 (R.W. Smart, V.H. Hebert); 15 individual birds reported mid-April to the end of May 2005 (v.o.) is a recent



high. Late spring migrants cannot be distinguished from possible breeding birds.

Summer and breeding. Nesting pairs and possibly non-breeding individuals have been recorded from every county, and specific localities are too numerous to mention. The majority of localities are in the southern half of the state, especially in the southeast, along the 2 major river valleys, and at major lakes or ponds. The increase of Beavers nearly statewide since 1950 has created much new favorable habitat which may have increased the number of birds found north of the White Mountains in recent years. Of special interest is that this species began to breed in the Lake Umbagog region again by 1949 after an absence of about 70 years: 1 there 30 Jun 1949 (T. Richards). Breeding bird surveys found a total of 12.3 per year on 22 routes from 1966 through 1975, decreasing to 5.5 per year from 1976 through 1985 and 6.6 from 1986 through 1995. The breeding bird atlas (Foss 1994) reports it in 43 priority blocks and in every county 1981–1986. While there are a few areas where it seems to have increased slightly, there are more where it appears to have declined, especially in the southern half of the state where many breeding marshes have been filled or have become disturbed since 1960. An exceptional count of 9 at Copps Pond, Tuftonboro, 6 Aug 2004 (P.D. Hunt) presumably represented more than 1 brood of adults and young of the year. WAP (2005) reports anecdotal evidence of a moderate decline which has also occurred regionally (Sauer 2008) though little change in distribution 1986–2005; an excellent distribution map is also provided in WAP (2005). BBS data show a small population trend decline in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. Due to the presence of summering birds, onset of fall migration cannot be told with precision but may be

by the last week of August. Peak migration period is the last 2 weeks of September and the first week of October, both inland and at the coast. There has been a scattering of November records, a few of them from inland localities. Aside from the 1881 record mentioned above, there are few December records, primarily from the coast on CBCs. The latest coastal reports are 1 on 18 Dec 1971 (A.C. Borror *et al.*), 3 on 21 Dec 1969 (A.C. Borror *et al.*), and 1 at Portsmouth 22 Dec 1988 (L. Urban).

Winter. One found at Seabrook 13 Jan 2006 (S.R. Mirick), 1 at Hampton 22 and 27 Jan 2002 (S.R. Mirick, D.B. and T. Donsker *et al.*) which successfully wintered to 19 Mar 2002 (S.R. Mirick), 1 at Rye 9 Feb 2002 (A. and B. Delorey), and 1 at Hampton 2 Jan 2007 (T. Bronson).

Least Bittern *Ixobrychus exilis*

Status. Irregular and very local spring, summer, and early fall visitor, principally in the coastal region. Rare in the interior or overlooked there. Believed to have bred but documentation of a nest is lacking. Doubtless has declined significantly since 1900 due to loss and disturbance of suitable habitat. A species of Special Concern in New Hampshire.

Early reports to 1950. The first 2 known records for the state were reported by Allen (1903): 1 collected at Hampton Beach in 1869 and put in the mounted collection of BSNH which cannot now be found, and 1 taken at Seabrook by Isaac George prior to 1900 and the identity confirmed by A. A. Eaton. Dearborn (1898) cites C. F. Goodhue as the authority for a record at Bradford on an unspecified earlier date and alludes to records at Hanover, presumably on the basis of the list by Worthen (1891). While the latter list is now considered untrustworthy, the species could have occurred as far north as Hanover in the Connecticut River valley prior to 1900, though it is absent from the list of the Hanover area in 1912–1917 by Lord (1918).

White (1924b, 1937) cites 2 specimens collected near Concord, the northernmost known locality in the Merrimack River valley, on unspecified dates, the present whereabouts of which are unknown. The only testimony for the species breeding in the state is that of Samuels (1867) that it has been “found to breed in all the New-England States.” Forbush (1925) simply stated that it “probably breeds.” Besides the above, the only other available records before 1950 are 3 reports by T. Richards: 1 at Gilford 22 May 1947; 1 at Eel Pond, Rye, 17 Jun 1949; and 1 noted as nesting at Contoocook River, Peterborough, 21 Jun 1949.

1950 to present. Little change in numbers or distribution noted.

The extreme early spring date is 10 May 1970 at Hampton (R.W. Smart). It is most often found in May and June

when still calling, but has been occasionally heard in July. Individuals have been known to stay at the same location from late June to mid-August, but breeding has only been strongly suspected twice: 29 Jul 1989 at Eel Pond, Rye (R.J. Bradley); and 20 May 1989 (M.J. Murray) at Nottingham.

Intensified field work produced 17 records in 10 of the years 1950–1972, mostly at a few favored locations in the coastal region such as Rye, Salem, Newmarket, Newington, Hampton Falls, Durham, Stratham, Hampton, and Exeter. Records have continued from some of these same localities since 1972. Few records have been from the interior: Stoddard 14 Jun 1966 (G.W. Cottrell); Orford 31 Aug 1957 (H.C. McDade); Laconia 30 May 1989 (A. Lincoln); Ballard Marsh in Derry 20 May 1995 (D. Strong *et al.*); 1 at Epping 23 May 2009 (G. Tillman); Cascade Marsh in Sutton Jun 1984 (Stephenson 1984); 1–3 at Hinsdale 5–9 Jul 2007 (H. Galbraith *et al.*), 1–3 there 14–24 May 2008 (B. Miller, L. Tanino *et al.*), and 1 there 6–8 Jun 2008 (P. Brown *et al.*); a pair seen and heard at Sandwich 28 Jun 2009 and other dates (R.S. Ridgely); and the northernmost at Cherry Ponds, Jefferson, 11 Jun 1997 (R.A. Quinn, D. Govatski *et al.*). Detailed species account in WAP (2005).

Fall migration dates are best indicated from the Isles of Shoals where there is no possibility of it breeding: extremes are from 9 Aug 1929 at Square Rock (C.F. Jackson) to 19 Sep 1971 at Star Island (H. Coolidge *et al.*) when 1 was photographed in a pear tree. One at Hampton Falls 2 Sep 1996 (D. Kirwan), and latest known record for the state is 1 at Stratham 4 Oct 2006 (G.W. Gavutis, Jr.). Of interest is 1 found dead far north at Colebrook 17 Sep 2010 (L. Wunder; photo).

Great Blue Heron *Ardea herodias*

Status. Regular spring and fall migrant and summer resident; breeds regularly but locally in the interior and northern parts of the state, less frequently in the southern and coastal portions.

Early reports to 1950. First recorded for the state by Belknap (1792) as the “Blue Heron, *Ardea caerulea*.” Brewster (1924) found it an abundant summer resident at Lake Umbagog on his first visit in 1871, but he noted that its numbers began to decline “about 1885” and observed that they continued to do so until 1909, it having become almost uncommon by then. His extreme dates for the lake were 12 May–27 October. He also had reports in 1872 and in 1896 of a large heronry near Errol along the Androscoggin River which he never saw but was very possibly the same one reported by Samuels (1867). Goodhue (1877a) reported it to be a common summer resident at Webster that formerly bred locally but which may have ceased doing so by that time. Dearborn (1898)

said it bred “sparingly” in Belknap and Merrimack Counties but was regularly present from “the first of April to the last of November.” He (1903) considered it a common spring and fall migrant in the coastal region but only an “occasional summer resident” and not known to breed there. Dearborn (1905) described it as only an occasional visitor to Northfield and doubted that it bred there.

Allen (1903, 1909) called it a “rather common spring and fall migrant and summer resident.” He mentioned a colony of at least 100 nests at Ossipee (E.A. Preble) up until 1888 and a small rookery of about 12 nests near Chocorua on 26 May 1901 (H.C. Sargent). He also saw birds with some regularity in the Saco River valley from around the first of August into the fall. He also had 3 very late inland records: 1 at Randolph 22 Dec 1884, 1 shot near Chocorua 21 Dec 1900 (*fide* H.C. Sargent), and 1 at Randolph 31 Dec 1901 (V.D. Lowe). Wright (1911) called it an “uncommon summer resident, undoubtedly sometimes breeding” in the Jefferson region, but he lacked definite nesting records. He noted birds present there in June or early July and in August and September; his latest date was 10 Oct 1903.

May (1920) recorded a colony of about 20 nests at Squam Lake in 1918, and Forbush (1925) called it an “uncommon summer resident in (the) southern half of New Hampshire., and farther north in [the] Connecticut Valley.” White (1924b) found it a “somewhat common spring migrant...; a rare summer resident...; [and] a somewhat common migrant in late August and September” in the Concord region. Later, White (1937) thought the species’s status unchanged except that “[o]f late years, there seem to be more of these birds visiting Concord than there were twenty-five years ago.” He considered June and July records mere stragglers, still knowing of no confirmed breeding in the area since the 1880s. His extreme dates for the Concord region were 23 March to 13 November. Taber (1952) reported the highest elevation record for the state, a bird at 3585 feet at Chatham 30 Jul 1939. The first true winter record for the species was 1 at Hampton 6 Feb 1937 (G. Richardson, RNEB).

Thaxter noted a remarkable flock of “nearly a hundred blue herons” alighting on Lunging Island in the Isles of Shoals in the last week of Apr 1890 as reported by Fowler (1960), this still being the largest known count for those islands or for the entire coastal region. Allan (1931) mentions 1 at the Shoals 13 Jul 1929 but does not say in which state. Wright (1937) says that this “species visited the islands rather infrequently during all three summers (1934–1936) [he] spent at the Shoals...in 1935 one was seen between Star and Appledore on July 24, and in 1936 one was seen flying past [Lunging] Island on August 10. Since the Great Blue Heron is an early migrant, it is likely that [both these] records represent migrating birds.” Jackson (1947) said that the situation had remained the same

since 1937 and that the species continued to be infrequent at the Shoals in July and August, only “one or two reported each year.”

Reports to RNEB are remarkably few in the 1930s, those available being late in the decade. But by the early to mid-1940s first arrivals in spring were regularly noted by the first 2 weeks of April, and fall migrants were regularly recorded in September and October with occasional lingerers into November. High counts of 29 were made at the coast 21 Sep 1948 and 14 Sep 1949 (T. Richards).

In summary, while it seems likely that this heron was common to abundant as a breeding species statewide in the precolonial and colonial periods, it apparently ceased being a common nesting bird and summer resident in the southern third of the state by the 1870s and in the central and Lakes Region by 1900, though a few small rookeries persisted. In the White Mountains and northward, the decline at Lake Umbagog from 1885 to about 1910 may have been typical since breeding in the Jefferson region was unknown in that period. The reason for the decline was unquestionably human interference in the form of uncontrolled incidental shooting and willful destruction of breeding colonies. Both Brewster (1924) and Allen (1903) record such intentional destruction of colonies, Allen’s (1903) report of 100+ pairs being the largest colony on record for the state. There have been very few counts of 100 birds or more at once since 1900, compared to the “hundreds” Brewster found at Lake Umbagog in the early 1870s. As a migrant, however, there is some evidence of an increase in 1925–1935 which may suggest better breeding success to the north. This increase seems to have continued into the 1940s, a modest increase in breeding statewide also occurring, but no large colonies were reported.



1950 to present. Some improvement in breeding distribution has been noted and general numbers seem to have increased significantly. Population trend listed as increasing by Hunt (2012).

Spring. Earliest known spring arrivals are presumed migrants at Manchester 5 Mar 2000 (J. and R. Williams) and 2 at Exeter 12 Mar 1955 (G.P. Baker *et al.*). General arrival, both at the coast and in the interior river valleys, is nearly always by the last week of March, a week or so earlier than in the 1940s. Mean arrival date statewide in 1952–1972 was 24 March. Peak of spring migration is typically the second and third weeks of April, and peak spring counts are 26 at the coast 18 Apr 1965 (E.W. and L.G. Phinney). Migration is generally over by mid-May, any late migrants or stragglers being indistinguishable from summer residents.

Summer and breeding. Away from nesting localities, birds are frequently noted in summer, especially in the coastal marshes and around Great Bay, but also regularly in the interior, even north of the White Mountains. Since 1950, breeding has been confirmed at 92 sites statewide (Foss 1994), and in 1981–1989, E. F. Swift documented nearly 100 heronries: “[t]he great majority were small, several consisting of a single nest, and a number of them were short-lived. Six heronries, however, included more than 50 nests each, and some have existed in the same locality for many years” (Foss 1994). Also, birds that may have been breeding were recorded from 107 other localities. For reasons not at all clear, this heron appears to have increased as a breeder south of the White Mountains but appears to have declined from there northward. A possible explanation for this pattern is the increase in the number of Beaver ponds which has provided more nest sites during this period in southern New Hampshire, especially since 1930 (Silver 1957), and a sharp increase in the Fisher population in the northern part of the state with attendant heron predation. A colony of 40 birds unusual so far north was at Second Connecticut Lake, Pittsburg, 25 Jul 1991 (C.J. Martin). In the 1970s there was a colony of 80–130 occupied nests on Long Island in Squam Lake (Ridgely 1988), though this site has had only 10–20 nests in recent years (R.S. Ridgely pers. comm.). Fifty-five were at Danville 30 Jun 2002 and 60 there 5 Jun 2004 (both K. Folsom); a rookery with 8 nests at South Hampton that began in 2002 grew to 22 active nests and 35 young by 5 Jul 2004 (J.W. Berry *et al.*). In the 1990s, breeding population was estimated at about 200 rookeries with about 1600 pairs (Hunt 2005, WAP 2005). BBS data show a mean population increase of about 1% per year in both 1966–2009 and 1999–2009 (Appendix IV).

Fall and winter. As suggested by Wright (1937) and Taber (1952), the first evidence of southbound migration for this species is often by the last week of July, though some of the movement observed in this period might be

more properly attributed to postbreeding dispersal: a surprising flock of 11 was on White and Seavey Islands as early as 11 Jul 2000 (D. Hayward, M. Charette). Migration is certainly under way by mid-August, often being noted in the interior river valleys and the central Lakes Region before becoming conspicuous at the coast. Peak fall migration there varies from year to year but is usually from the second week of September through the first week of October. Peak inland fall count is 14 at New Hampton 30 Aug 1970 (D. Leslie) while peak coastal fall count is 66 at Hampton 17 Sep 2005 (J. O’Shaughnessy). Late migrants and stragglers are routinely found both at the coast and inland until November, occasionally into December, and even into January and February at the coast in mild winters. There has been a pattern of steady increase in annual mean numbers found on the Coastal CBC: 0.2 in the 1950s, 0.6 in the 1960s, 8 in the 1970s, 7 in the 1980s, 14 in the 1990s, and 9 in the 2000s; highest known CBC coastal count is 38 in 1993.

Latest known migrants at the Isles of Shoals in fall are 4 at Star Island 26 Oct 1969 (L.G. and E.W. Phinney). This species has occasionally wintered in the coastal region since 1990, and has rarely been found in the interior in February: 1 at Middleton 28 Feb 1998 (S. Snyder), 1 at Northwood 15 Feb 2001 (G. Rollins), 1 at Concord 29 Jan 2005 (B. Folsom).

Great Egret *Ardea alba*

Status. Regular spring and fall migrant and summer visitor, greatly increased since 1948. No record of breeding. In many years, the first birds do not arrive until July or August, probably as a result of postbreeding dispersal from nesting localities farther south or from coastal ME where it first began breeding by the early 1970s.

Early reports to 1950. The “White Heron, *Ardea alba*,” of Belknap (1792) surely belongs here. The first certain state record was 1 shot at Newmarket in the summer of 1897 by C. Perkins and examined by Dearborn (1903). A sight record at Franklin Falls 18 May 1901 (Mrs. E.E. Webster), while possibly accurate, was considered hypothetical by Allen (1903). Blake (1924) found 1 at Rye 6 Aug and 5 at Rye Harbor 7 Aug 1923, and a local game warden told him the birds had been present for 4 to 6 weeks. One was at Portsmouth 25 Jul 1925 (J.T. Coolidge *et al.*), and 2 were there 4–11 Aug 1925 (W. Brooks *et al.*). One was found at Salem Depot on 13 Apr 1930 (R. Palmer *fide* L. Griscom). L. R. Nelson collected 1 at Hinsdale 4 Aug 1933 and another at the same place 26 Jul 1937; the latter specimen was in the mounted collection at the NHFG headquarters which burned down 21 Apr 1984 (Swanson 1984).

RNEB mentioned several records 1937–1947: 1 was at Portsmouth 3 Oct 1937 (G. Walcott), 5 were at Rindge

31 Jul 1937 (F.H. Allen), 1 was at North Rye 14 Aug 1937 (J.A. Collins), 1–2 were at North Hampton 16–17 Apr 1938 (H. Shaw), 1 was at Portsmouth 17–28 Jun 1938 and 2 were there 13 Jul 1938 (J.T. Coolidge), 1 was at Portsmouth 14 Jul 1939 (J.T. Coolidge), 1 was at Hampton 19 Jul 1940 (E. Mason), 1 was at Seabrook and 1 was at Hampton Falls 7 Jul 1944 (R.M. Stanley) and 1 was still at Hampton 14 Jul 1944 (F. Burnett), 7 were at Hampton Beach 3 Aug 1944 (V.H. Hebert *et al.*), 1 was at Pike 7 Aug 1947 (J. Large), 1 was at Monroe 12 Aug 1947 and for several days following (Mrs. Clough *et al.*), 2–5 were at Rindge for several days up to 16 Aug 1947 (*fide* Ekblaw), 1 was at Taylor River 21 Aug 1947 (B. Dennis), 1 was at Gilmanton 6 Sep 1947 (J.B. Abbott), and 2 were at New Hampton 21 Sep 1947 (T. Richards). Thus, it began to appear more frequently and in greater numbers from the mid-1930s into the late 1940s.

The above is the entire known record of this species in the state prior to the unprecedented influx of “southern” herons in Jul and Aug of 1948. One hundred seventy-five birds were recorded at 32 localities in the state that year. The earliest were 8 at Hampton on 1 Jul 1948, and the maximum count was 46 at Seabrook in late Aug. The latest records were 4 at Portsmouth on 4 Oct 1948 (Forbes) and 1 through Nov until 6 Dec 1948 at Woodsville (Mrs. H. Smith). The northernmost report that year was 1 at Monroe on 26 Sep 1948 (I.F. Hunt *et al.*) (Cottrell 1949, RNEB).

1950 to present. Recorded every year 1949–2009. Extreme dates in this period were 11 Mar 2007 (R.W. Suomala *et al.*) to 13 Nov 2005 at Hampton (T. Bronson). Of 268 reports 1949–1975, 1 was recorded in March, 4 in April, 14 in May, 7 in June, 23 in July, 108 in August, 106 in September, 3 in October, and 2 in November, indicating that it is commonest as a migrant and postbreeding wanderer in late summer. Thirty-nine of these reports were from inland localities, the balance being from the coastal region. This pattern has continued 1976 to date. Inland records are widely scattered south of the latitude of the Lakes Region, though they tend to be concentrated along the 2 major river valleys.

In 1949–1973, there were only 2 reports north of the Lakes Region: 1 at Monroe 30 Jul to 14 Aug 1969 (R.B. Emery, L.E. Cole, P. Powers *et al.*) and the northernmost state record 8 Jun 1971 at Errol (T. Richards *et al.*). Since 1973, there have been occasional reports north of the Lakes Region, most often in the Connecticut River valley in August and September during postbreeding dispersal, latest being 1 at Columbia 29 Nov 1997 (D. and B. Killam). Unusual reports in spring north of the White Mountains were single birds at Lancaster 14 Apr 2004 (M. Hinten) and possibly the same bird at Littleton 27 Apr 2004 (B. Thomas *et al.*). An unusual spring influx was at least 10 inland 18–20 Apr 2002 (P.D. Hunt; Perkins 2002).

Since the establishment of the nesting colony on Wood and then Stratton Island near Saco, ME, in the early 1970s, numbers seen in the coastal marshes have increased significantly: 28 at Hampton/Seabrook marshes 29 Jul 2006 (S.R. and J. Mirick) and 52 at Hampton 16 Aug 2007 (E.A. Masterson). An unusually large flock of 43 was at Hampton 20 Sep 1951 (J.J. Berry); 46 were at Seabrook 20 Sep 1999 (S.R. Mirick); 54 were at Seabrook 21 Sep 2009 (L. Medlock); and an exceptional flock of 13 was far north at Leonard Marsh, Lake Umbagog, 4 Aug 2001 (C.J. Martin *et al.*). Though Borror and Holmes (1990) do not mention them breeding on Appledore Island, ME, Great Egrets began using the heron colony there between 1990 and 2001–2002 when introduced Raccoons *Procyon lotor* drove all the nesting herons away (Ellis *et al.* 2007).

In 2001–2009, there were fewer reports in spring and early summer than in the prior several years but good numbers appeared in postbreeding dispersal in August to October. High inland totals in these 9 years were 24 birds in 6 localities in Aug 2001 (v.o.), 22 found inland at 9 localities from early August to mid-October 2002 (v.o.), and 26 reported inland 24 Jul to 10 Sep 2004 (v.o.). Peak coastal numbers were 121 at Seabrook 31 Aug 2008 (S.R. and J. Mirick) and 95 at Hampton 13 Sep 2008 (M. Iliff); these are the highest known single-site reports.

Little Egret *Egretta garzetta*

Status. Vagrant from Eurasia. Two records, both from the coastal region. First was 1 at Hampton Falls 2 Aug 1992 (S. and D.J. Abbott), and 1 was in Newmarket 30 Jun–14 Aug 1998 (S.R. Mirick, D.J. Abbott, D.B. Donsker *et mult*; photo). One at Rye 28 Apr–1 May 1990 (P.D. Hunt *et mult*; photo) and 1 at Rye Harbor 20–21 Apr 1997 (S.R. Mirick *et al.*; photo) are both suspected by the NHRBC to have been hybrids between Little Egret and Snowy Egret. See Mirick (1998) and Sibley (2011). At least 7 records for MA (Veit and Petersen 1993, BO database 2010) and 1 record for ME (P.D. Vickery pers. comm.).

Western Reef-Heron *Egretta gularis*

Status. Vagrant from western Africa or the Lesser Antilles where it is a potential breeder (Buckley *et al.* 2009). One record in 2006, the second known report for the United States. Originally photographed at Rye 9 Aug (M. Houston; color photo on cover of NHBR 25 [3]), not seen again until 19 Aug at Portsmouth Harbor (S.R. Mirick *et al.*), and then seen intermittently, since it spent some time across the river in ME, until last at New Castle 20 Sep 2006 (T. Bronson). Also see Mirick (2006) and photos NHBR 25 (3): 62–63.

Snowy Egret *Egretta thula*

Status. A common and regular spring, summer, and early fall resident in the coastal region. Only a straggler in the interior. Not known to breed in the state but has on Appledore Island, ME, in the Isles of Shoals, every year from 1961 to about 2002 or 2003 when Raccoons apparently introduced on Star Island, New Hampshire, began to decimate the heron colony. Though the Raccoons were trapped out in 2004 (Ellis *et al.* 2007), no breeding Snowy Egrets have returned as of 2010.

Early reports to 1950. The first state record is 1 at Hampton Falls 21 Aug 1948 (M. and E. Emery; *contra* 1947 in Foss 1994) and possibly the same individual at Hampton 19 Sep 1948 (T. Richards *et al.*) during the great “southern” heron influx of 1948 (Cottrell 1949). One was near Durham 21 Mar 1949 (Delano).

1950 to present. One was found at Rye Harbor 28 May 1952 (A.E. Lajoie *et al.*) and at least 2 were at the Hampton marshes 25 Jul to 12 Sep 1954 (K.C. Elkins, P. Keenan *et al.*). No other reports are known until 1959, since when it has been recorded every year to date. Earliest known arrival date in spring is 27 Mar 1997 at Rye (S. Stanley). General arrival is usually in the second or third weeks of April, and highest spring counts are usually recorded in the last 2 weeks of May, the highest known being 41 on 29 May 1971 (J.E. Cavanagh). Summer numbers are highly variable and the number seen on a given day along the coast depends on the number commuting from the former breeding colony at the Isles of Shoals. Though never recorded breeding on the New Hampshire islands, 6 pairs were found nesting on Appledore Island, ME, in Jul 1961 (Borrer and Holmes 1990), only a few hundred yards from the state boundary, and the species continued to nest there until 2004. In 1967 there were only 10 pairs there, but the number had risen to an estimated 60 pairs by Jun 1972 and 200–250 pairs by 1978–1979, only to drop to about 50 pairs in 1988 (A.C. Borrer). Most of the birds nesting there flew the 9 miles to the New Hampshire coastal marshes to feed. Up to 64 were on White and Seavey Islands 12 Jul 2000 (D. Hayward, D. Trested), likely from the Appledore colony, but the following summer numbers dropped to the 10–12 range (D. Hayward *et al.*). There have been at least 3 other breeding sites in southern coastal ME (Borrer 1990, A.C. Borrer *in* Foss 1994), the largest of which is a colony of about 100 pairs on Stratton Island near Saco, ME (P.D. Vickery pers. comm.); birds nesting in ME pass through the New Hampshire coast on migration in spring and fall.

The numbers observed in the coastal region in July and early August can be in the 15–55 range, a slight decline from June counts, possibly due to postbreeding dispersal. Fall migration peaks in late August. High fall counts at this season are 120 at Rye 30 Aug 1972 (D.J. Abbott) and 252 at Seabrook 12 Sep 1999 (S.R. Mirick, P. Lacourse).

Typically only small numbers are left after the end of September. Extreme late fall dates are 1 at Rye 13 Nov 1988 (S.R. Mirick, C. Barber), 1 at Portsmouth 16 Nov 1969 (R.W. Smart *et al.*), and 1 at North Hampton 22 Nov 2001 (R.A. Woodward).

Inland. In spring, earliest known is 1 at West Lebanon 31 Mar 1972 (G. and W. Ellison), 4 times in April (Epsom, Hanover, Lebanon, Franconia) and twice as late as 20 May (Dalton, Hanover). Summer records are twice in late July at Canterbury 20 Jul 1991 and 28 Jul 1993 (both R.A. Quinn) and 7 times through August including 1 at Pinkham Notch 22 Aug 2002 (K. Eisenberg) and the northernmost known report of 2 at Leonard Marsh, Lake Umbagog, 5 Aug 2001 (C.J. Martin *et al.*). Two fall records are 1 at Manchester 16 Sep 1987 (M.T. Martin) and the latest at Hollis 12 Oct 2002 (S.R. Mirick, J. Lawrence).

Little Blue Heron *Egretta caerulea*

Status. Irregular spring, summer, and early fall visitor, found much more frequently since 1948. Not suspected of breeding. Sometimes does not arrive until August or September, presumably in postbreeding dispersal from nesting localities farther south or formerly in ME at Appledore Island or near the mouth of the Saco River.

Early reports to 1950. The first known state record was 1 taken at Amherst 28 Apr 1897 by a collector now unknown (Melzer 1897). Allen (1903, 1909) reports 1 seen near Concord 27 Jul 1902 (F.M. Abbott *et al.*). Shelley (1935a) records an immature shot at East Westmoreland in Aug 1918 (W. Johnson). Four were seen at Portsmouth on 6, 7, and 11 Aug 1925 (Carey and Coolidge 1925). Single birds were collected by L. R. Nelson at Winchester after a hurricane on 22 Oct 1932 and at Hinsdale 3 Aug 1933. Twelve were at Hampton 21 Aug 1944 and 9 of them were still present 24 Aug (J.T. Coolidge, Jr.). The records of these 21 birds appear to constitute the entire history of this species in the state prior to the great flight of “southern” herons into New England in Jul and Aug 1948. In that flight, a total of 44 birds were recorded at 5 localities in New Hampshire, 25 of which were on the coast 26 Jul 1948 (S. Higgenbotham), and single birds were found as far north as Concord and Epping, the maximum being 34 at West Rindge and Hampton 7 Aug 1948 (T. Richards).

1950 to present. It was recorded in all but 5 of the years 1949–1973 and every year 1963–2009. Extreme dates are from 9 Apr 1970 at North Hampton (W.C. Chisholm, J.E. Cavanagh) to 1 at Newmarket 15 Nov 1954 (Weston). In 1949–1973, a total of 66 birds were reported of which 7 were found in the interior. In 1974–2009, 53 birds were reported of which 9 were in the interior, or slightly less often than in 1949–1973. In the coastal region since 1949,

13 birds were been found in April, 18 in May, 8 in June, 17 in July, 26 in August, 16 in September, 3 in October, and 1 in November. The known records for the New Hampshire Isles of Shoals are 1 at Star Island 10 May 1970 (A.C. Borrer, R.W. Smart *et al.*), an unusual total of 3 at White and Seavey Islands 30 Jul 1998 (J. Ellis, D. Hayward), and 1 at Star Island 25 May 1999 (R.W. Suomala *et al.*). At least from 1974 through 1989 as many as 2 pairs nested in the heron colony on Appledore Island, ME (Borrer and Holmes 1990), which surely accounted for some of the coastal summer reports in that period. The heron nesting colony on Appledore was decimated by Raccoons by about 2002–2003 and none have nested there since (Ellis *et al.* 2007). Beginning in the 1970s, a few began nesting at Wood Island and then at Stratton Island near Saco, ME, and 10–20 pairs still do (P.D. Vickery pers. comm.); these birds surely account for both spring and fall migrants on the New Hampshire coast and for postbreeding dispersal reports in late summer.

Inland, there are 18 records since 1949, once in April at Canterbury 23 Apr 1960 (R.W. Smart *et al.*), 3 times in May (Durham, Surry Mountain Reservoir, New Hampton), the northernmost reports on 16 Jul at Lyme in 2005 (C. Sexton) and at Ashland in 2009 (I.C. MacLeod), 3 other times in July (Walpole, Contoocook Lake, Durham), 4 times in August (Dublin, Manchester, Concord, Rochester), twice in September (Dunbarton, Nashua), once in October at Milton on 9 Oct 1964 (J.R. Warren), and the latest near Peterborough 2 Nov 1984 (O. Rhines *fide* H.M. Cadot).

Tricolored Heron *Egretta tricolor*

Status. Irregular visitor from the south, though reported with increasing frequency since it began breeding near the mouth of the Saco River in ME. Has not bred in New Hampshire.

Records. The first known state record was 1 found at Rye Harbor 11 Jun 1960 (C.H.S. Merrill) which remained until 22 Jun (K.C. Elkins *et al.*). One was found inland at Hopkinton on 22 May 1969 (M.N. Dodge) and either this or another individual was found at Rye 24 May 1969 (B. Clarner). One was found at Hampton 30 Apr 1971 (A.C. Borrer *et al.*), presumably the same individual seen at Rye on 5 May 1971 (L.G. and E.W. Phinney). Rutledge (1972) includes this species in the bird list for Star Island, the only known reference to it occurring there. No other reports until 1976.

Since 1976, there have been 22 records at the coast between extreme dates of 1 at Rye 14 Apr 1976 (J.E. Cavanagh) to an immature at Hampton Falls 25 Sep 1976 (A.C. Borrer *et al.*). Twelve birds were found 1976–1982, mostly in May and August. Eleven birds were found 1987–2009, scattered about evenly from early May to

early September. The most seen at any one time is only 2. The majority of records appear to be the result of spring migration and postbreeding dispersal. There are only 2 inland reports: the 1 at Hopkinton, 1 at Bennington 1 Jun 1980 (F. Cordell *fide* T. Richards), and 1 at Bennington in May 1980 (F. Cordell *fide* H.M. Cadot) on a date now lost.

In Jun 1980 up to 4 birds were on Appledore Island, ME, in the Isles of Shoals but no nest or young were found (Borrer and Holmes 1990) and none have been found since. A few pairs began breeding on Stratton Island near Saco, ME, by the 1970s about 40 miles north of the New Hampshire border, but ceased to do so by about 2005 (P.D. Vickery pers. comm.); spring and fall migrants to this site and postbreeding dispersal certainly accounted for records from coastal New Hampshire.

Cattle Egret *Bubulcus ibis*

Status. A regular visitor in spring and a straggler in fall, first recorded in 1953. Not suspected of breeding; only recorded once in the months of July and August.

1950 to present. This species was first found in the United States in MA in Apr 1952. The first New Hampshire record was a juvenile found at Barnstead Parade 9 Nov 1953 (Mrs. R.A. Pinard), so weak that it was captured alive. It was released the next day at Stark Waterfowl Refuge in Dunbarton but was recaptured later that day a few miles away by H. C. Chambers (1956). It was kept in captivity by the Chambers family for about a year during which time it came into adult plumage. The second state record was a bird seen at Penacook 11 Nov 1953, only 2 days after the first, and reported to NHFG. Despite the comment of Crosby (1972) that a New Hampshire specimen had been taken by 1956, none has yet been taken to our knowledge. The third state record was 1 found at Milford 16 May 1959 (Currier).

After an initial major population spike in the 1960s, it has declined in numbers and frequency since 1985. Extreme spring dates are from 11 Apr 1971 at Stratham (R.W. Smart, D.J. Abbott *et al.*) to 2 Jun 1972 at Westmoreland (W.W. Kidder). Spring numbers are highly variable. Distinct flights of at least 9, 14, and 43 birds were recorded in early May 1962, late May 1966, and early May 1964, respectively. The highest count for a single locality is 20 at Stratham 10 May 1964 (C. Merrill *et al.*). In some years, spring records have consisted of only a single bird (1959, 1960, 1963, 1970, 1997, 2002, 2003, 2006) or there have been none (1965, 1974, 1989–1991). Spring records have been concentrated in the southern third of the state, primarily in the coastal region and particularly near Great Bay or in the lower Connecticut and Merrimack River valleys. The northernmost spring records have been at Hanover (1966), Ossipee (1960), at Monroe

15 May 1972 (P. Powers), and far north at Wentworth's Location 13 May 2004 (L. Wunder *et al.*; photo). A total of at least 76 birds were recorded in the spring seasons 1960–1979 but records have become much less frequent 1985 to date. The first known reports for the New Hampshire Isles of Shoals were 1 at Seavey Island 18–24 Jun 1998 (J. Ellis, D. Hayward), 1 at Star Island 21 Jun 1998 (B. and B. Coyle *et al.*), and 1 at White and Seavey Islands 24 Jun 2005 (M. Barney *et al.*).

A single midsummer record is 1 inland at Manchester 31 Jul 1977 (M.G. Bouchard). In contrast to the spring, many fewer birds have been recorded in fall, and in recent years the fall reports have been late in the season. Extreme fall dates are 1 on 24 Aug 1974 at Warner (J.E. Cavanagh) to 1 at Concord 23 Nov 1970 (H.B. Miller), a total of only 26 birds. In addition to the first 2 state records, 1 was at Hampton Falls 30 Sep to 8 Oct 1972 (E.W. Phinney, K.C. Elkins *et al.*); 1 was at Wentworth 6 Nov 1994 (J. Carreaux *et al.*); 1 was at Warren 13 Nov 1994 (J. Carreaux); 1 at Crystal Lake, Enfield 19 Oct 1995 (P.D. Hunt *et al.*); 1 at Canaan 19 Oct 1995 (M. Suomala *et al.*); 1 was at Walpole 29–30 Oct 1977 (D.W. Brainard *et al.*); 1 there 30 Oct to 14 Nov 1965 (W.W. Kidder *et al.*); 1 at Madbury 8–11 Nov 1979 (R.A. Quinn *et al.*); and a bird found at Gilmanton 9–16 Nov 1970 (G. Teel) was probably the same individual found at Concord 22–23 Nov 1970 (H.B. Miller). After 1970, it became much less frequent in fall; only 4 fall records 1995–2005, and the only ones since are 1 at Concord 23 Oct 2006 (E.A. Masterson), 1 at Rochester 11–15 Sep 2007 (D. Hubbard, S.R. Mirick *et al.*), and 1 there 25 Aug 2009 (L. Kras *et al.*).

This species nested for the first time in MA in 1974 but has done so only sporadically since (Veit and Petersen 1993). A few pairs nested on Stratton Island near Saco, ME, about 40 miles north of the New Hampshire border from 1977 (Vickery 1977) but ceased to do so about 2005 (P.D. Vickery pers. comm.).

Green Heron *Butorides virescens*

Status. Regular spring and fall migrant; locally common summer resident and breeder in the coastal region, scarcer in the interior and very local north of the White Mountains. Increased somewhat from 1900 to 1950, especially in the interior, since which time its numbers have been stable to slightly lower.

Early reports to 1950. First recorded for the state by Belknap (1792) as the “Skouk, *Ardea virescens*.” The next known record was that of a bird shown to Brewster (1924) that had been shot at Sargent Cove, Lake Umbagog, 28 Aug 1874. This was the only New Hampshire record Brewster had of only 3 birds recorded at the lake in 1871–1909, the other 2 being observed in ME. Goodhue (1877a) found it an uncommon summer resident in

the Webster area. Dearborn (1898) considered it regular and common in Belknap and Merrimack Counties, (1903) “common along Oyster River and the Piscataqua from May through September” and breeding regularly in the coastal region, and (1905) an “occasional breeder” at Northfield though “far less common...than near the coast.” Allen (1903) considered it a “not uncommon summer resident about the lakes and water courses of the southern part of the state, becoming rarer in the central regions.” He knew of it only as far northeast as Ossipee and in the west had only 1 record 6 Jun 1897 (F.B. Spaulding, J.N. Clark) as far north as Lancaster. However, he reported it as common at Walpole and at Newfound Lake (Howe 1901–1903). Wright (1911) only had records in 1909 and 1910 at Lancaster to add to the 1897 record there.

White (1924b) called it a “somewhat common migrant in spring” in the Concord area. He had no confirmed breeding records though he suspected it bred there; the birds were largely absent in July and much of August, migrants appearing again in September. Later, White (1937) considered its status in Concord unchanged in spring, that it was scarcer in fall than in spring, and breeding was still unconfirmed, but he had more records. His extreme dates were 3 May 1936 to 18 Sep 1924. This species was virtually unreported to RNEB in the 1930s and early 1940s; by the late 1940s it was reported more often, the extreme early arrival date in spring being 1 at Exeter 5 Apr 1948 (N.L. Hatch) and usual first arrival being noted in the first week of May. One nest with 5 young noted 29 Jun 1947 at New Hampton (V.H. Hebert).

While this species may occasionally visit the Isles of Shoals, especially on fall migration, the only early record is for a bird there in the summer of 1935 mentioned by Jackson (1947) without specifying in which state, but surely the same individual referred to by Wright (1937) found on Appledore Island, ME, no date being given.

In summary, since the earliest reports, this species appears to have been common along the coast. In the interior since 1900 it seems to have become either more common or more frequently reported in the western and central parts of the state, particularly along the Connecticut River as far north as Monroe.

1950 to present. The number of reports has increased from locations northward along the interior river valleys but has declined slightly in the southern part of the state and the coastal region, perhaps due to habitat loss and disturbance. Overall, however, the species's total population and distribution appear to have remained stable or slightly increased in the last 200 years.

Spring. Earliest known spring arrival date since 1950 is 14 Apr 1964 at Durham (A.C. Borrer), and mean arrival date is 28 April. General arrival is not usually until the second week of May, and peak spring migration count is

11 at the coast 10 May 1964 (V.H. Hebert). A migrant was at White and Seavey Islands 27 May 2002 (D. Hayward *et al.*). Late spring migrants are indistinguishable from summering birds.

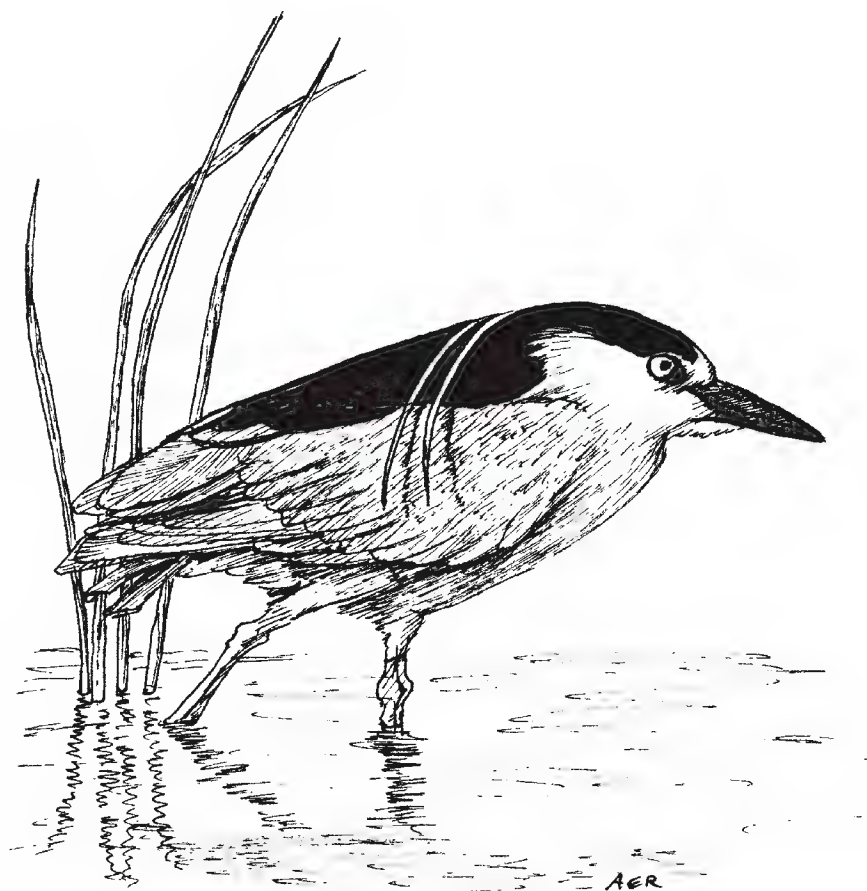
Summer and breeding. Breeding season counts along the coast are highly variable, the 2 highest being 45 on 23 Jul 1961 (R.W. Smart, V.H. Hebert) which probably included some young of the year and some birds involved in post-breeding dispersal, and a remarkable count of 82 at Hampton Falls 29 Aug 1971 (R.W. Smart). This latter count was made as the birds left a communal roost at daybreak and probably included breeding adults, young of the year, and migrants. This species is much scarcer away from the coast and is most often found along the 2 major river valleys and the margins of major lakes. Foss (1994) reported only 11 confirmed breeding sites in the state, 8 of which were in the southeast and none of which were in Coos County. Since 1950 it has been confirmed breeding south of Coos County at New Hampton, North Conway, Littleton, Andover, Walpole, New Ipswich, Durham, Hopkinton, Londonderry, Hudson, Exeter, Bedford, Concord, Tilton, Canterbury, Charlestown, and Northfield. It has been recorded June through August at many other interior localities and doubtless has bred at some of them. In Coos County, birds have been found in breeding season in Stratford, Whitefield, Lancaster, Milan, Dummer, Berlin, Dixville, Errol, Shelburne, and Pittsburg. While it may be safe to assume that it has bred at several of these localities occasionally, that has yet to be confirmed. BBS data show a small population trend decline averaging about 1% per year in 1966–2009 and 1999–2009 (Appendix IV). High inland late summer count is 15 at Hinsdale 25 Aug 1958 (T. Richards).

Fall. Migration begins in late August and peaks in the second and third weeks of September. Since 1965, individuals have lingered irregularly into early October. Latest records at the latitude of the White Mountains or farther north are 2 at Dummer 27 Sep 1959 (ASNH field trip) and 1 at Lisbon 15 Oct 1968 (L.E. Cole). Latest and northernmost reports in the Merrimack River valley are 1 at New Hampton 8 Oct 1954 (V.H. Hebert) and 1 at Epsom 9 Nov 1972 (S. Thompson). Latest coastal records are 1 at Rye 25 Oct 1968 (L.G. and E.W. Phinney) and 1 at Greenland on Great Bay 20–25 Nov 1964 (R.M. Gamester).

Black-crowned Night-Heron *Nycticorax nycticorax*

Status. Regular spring and fall migrant and summer resident, common in the coastal marshes; much scarcer in the interior, especially in the north. Not known to have successfully wintered. Has declined noticeably in recent years.

Early reports to 1950. First reports are those of Brewster (1924) at Lake Umbagog in 1871–1909. He found it “rather common in [late] summer and early autumn,” but unknown to breed. He had only 1 late spring record, 1 seen at Leonard Pond, Errol, 7 Jun 1873. Dearborn (1898, 1905) considered it “rather rare in central New Hampshire” in Belknap and Merrimack Counties, having only a single report (*fide* C.F. Goodhue). Dearborn (1905) called it a “rare straggler” at Northfield, but (1903) called it an “abundant summer resident” in the coastal region present from May to October. He described colonies at Newington and Newmarket on the shores of Great Bay in 1897 and 1898, though human persecution later caused their abandonment. Allen (1903) considered



it a “not uncommon summer resident near the coast but less common inland,” especially “over the greater part of the central, western and northern” parts of the state. He mentions a very few birds found at Chocorua in late summer (F. Bolles) and found a few nests he attributed to this species at Intervale. It was surely very uncommon in the Connecticut River valley at that time because he says that W. M. Buswell of Charlestown and F. B. Spaulding of Lancaster, both active field observers, had never found it there. In addition, Goodhue (1877a) had not found it in Webster by 1877, Wright (1911) never found it in the Jefferson region, and White (1924b) did not list it for the Concord area.

Some increase appears to have taken place inland beginning in the 1920s, as White (1937) states that “This heron used to be considered a great rarity but has wandered into Concord with some frequency in recent years...particularly in July...[From 1921] on, it has been noted every year except 1926 and 1935.” He had no evidence of nesting, and his other remarks suggest that the vast majority

of birds found there occurred in the postbreeding dispersal from July to September. May (1929) showed that birds banded in MA wander to New Hampshire in this dispersal. But some local breeding also took place inland, the largest known colony being 43 nests found at Manchester in 1927 (A. McGowan *fide* L. Griscom). Jackson (1947) called it “abundant near Portsmouth” in summer. This species went virtually unreported to RNEB 1936–1949.

In summary, it appears that this species has always been moderately common in the coastal region. Inland it was uncommon to rare even in the 2 major river valleys and even during postbreeding dispersal until the 1920s, though it was at least irregular in the Saco River valley and at Lake Umbagog in 1870–1900. Its numbers inland appear to have increased somewhat from the 1920s to the 1940s, after which they began to decline.

1950 to present. Gradual decline until the 1960s, after which the decline was more rapid.

Spring. Earliest known spring arrival is 1 at Littleton 30 Mar 1962 (L.E. Cole). Typically, however, the first arrivals are found in the coastal region or much farther south than Littleton in 1 of the 2 major river valleys. Mean arrival date for 1953–1972 is 16 April, and the peak spring migration period is usually the last 2 weeks of April. Highest spring migration count is 21 at Hampton 13 Apr 1971 (D.J. Abbott), by far the highest since 1950. Six migrants were at White and Seavey Islands 28 May 2002 and 6 there again 29 May 2003 (both D. Hayward *et al.*); 9 were there 22 Jun 2003 (M. Barney *et al.*). Inland spring migrants are scarce and are indistinguishable from the few summering birds. One at Hancock 24 Jun 2004 (D. and L. Stokes), and 1 as far north as Errol 31 May 1997 (R.A. Quinn, J.W. Berry).

Summer and breeding. Essentially all of the birds seen at the coast breed on Appledore Island, ME. This colony did not exist as recently as 1936 according to Wright (1937a) even though a few birds were present around the island that summer. Jackson’s (1947) comment that it was “abundant” at Portsmouth in summer and the presence of 30 birds at Seabrook 16 Jun 1949 (T. Richards) suggests that the Appledore colony was established by the late 1940s. The colony is known to have ranged in size from 35 pairs (1976) to 67 pairs (1982) (Borrer and Holmes 1990). Introduction of Raccoons on Star Island by the winter of 2001–2002 resulted in the decimation of the Appledore heron colony by 2003; the Raccoons were trapped out in 2004 (Ellis *et al.* 2007), but the only documented nesting there since was 1 pair in the summer of 2009 (D. Bonter pers. comm.). No Black-crowns are proved to have nested on any of the New Hampshire islands.

Five young birds were found at Hoag Island in Squam Lake 15 Jul 2002 (H. Coolidge); if they were raised there,

this constitutes the unique known interior breeding record in over 50 years. Though there are occasional reports of birds inland in June and July that might be nesting, breeding inland has not been confirmed since 1950. In the *Atlas of Breeding Birds* project 1981–1986 (Foss 1994), there were no confirmed breeding sites in the state, though nesting was suspected at Rye, New Castle, and Hampton (*fide* G.W. Gavutis, Jr.; A.C. Borrer). An adult and 3 weakly-flying young at Rochester 17 Jul 1997 (R.W. Suomala) may represent a rare nesting in the southeastern part of the state, though these birds could have easily nested in nearby ME.

The first known reports from the New Hampshire Isles of Shoals are 1 at White and Seavey Islands 31 Jul 1998 (J. Ellis, D. Hayward); 1 there 1 Aug 1999 (D. Hayward); 6 there 17 Jun 2001 (D. Hayward *et al.*) and 3 there 19 Jun 2000 (D. Hayward, M. Charette); and 1 at Star Island 29 Sep 2002 (M. Suomala *et al.*).

Beginning in the second week of July, postbreeding dispersal probably accounts for a high percentage of the mid- and late summer records along the interior river valleys, occasionally even in small flocks. This dispersal also contributes to concentrations noted at the same time in the coastal region. Birds are believed to have dispersed from the former colony at Appledore Island, ME, and from the few birds that nest in some years at Parker River National Wildlife Refuge, the latter just a few miles south of the New Hampshire border. The colony on Appledore Island disappeared by 2003. Other than in spring migration, late summer and early fall is the only season when this species is likely to be found in the northern Connecticut River valley at such localities as Littleton and Pittsburg, the latter being the northernmost place in the state from which it has been recorded.

Fall. Migration usually begins by mid-August and often peaks in the last week of that month and the first week of September. Peak count was 65 found at the coast 31 Aug 1961 (R.W. Smart, V.H. Hebert). Numbers dwindle to very few by late September, but individuals are regularly noted until the second week of October. Latest fall records are 1 on 7 Nov 1954 at Hampton (P. Keenan *et al.*), 2 at Portsmouth 22 Nov 1969 (L.G. and E.W. Phinney), 1 there 26 Dec 1953 (CBC), and 2 at the coast 17 Dec 1977 (D.J. Abbott). Inland, the latest and northernmost record of a presumed migrant is 1 at Pittsburg 10 Sep 1961 (W.W. Kidder); 1 was at Concord 26 Dec 1993 (J. Verville).

Winter. One at Seabrook 22 Jan 1995 (D.B. and T. Donsker); 1 at Portsmouth 18–26 Jan 2008 (S.R. Mirick *et al.*).

Yellow-crowned Night-Heron *Nyctanassa violacea*

Status. Irregular spring, summer, and fall visitor. Not sus-

pected of breeding. Very rare prior to 1959. All but a few reports are from the coastal region.

Early reports to 1950. The first known state record is 1 at Portsmouth 8 Jul 1920 (Coolidge 1920). The next was 1 collected along a brook in a spruce forest at Grantham 23 Sep 1926 (Barbour 1927) after a hurricane. Coolidge (1929) reported 1 at Portsmouth 13 Aug 1929 and found an adult there 10 Jul 1939 (J.T. Coolidge, Jr.).

1950 to present. An adult was at Hampton 20 Jun 1950 (T. Richards), an adult was at Hampton 7 Jun 1951 (T. and B.D. Richards), and 2 were found at Seabrook 8–16 Aug 1959 (K.C. Elkins, R.R. Rathbone *et al.*). Thirty-three individual birds were reported in the years 1960–1999. Extreme dates are from 27 Apr 1996 (P. Lacourse *et al.*) until 12 Oct 1968 at Durham (A.C. Borrer *et al.*). The numbers found in each month from June through September were almost exactly equal 1960–1999 except for a slight spike in August (Masterson 2003b). Additional reports since 2000 are 1 on 1–8 Jun 2003 at Hampton (R. Falk, D.B. Donsker *et al.*), 17 Sep 2006 at Hampton (S.R. and J. Mirick), possibly the same bird there 20 Sep 2006 (J. O'Shaughnessy), 3 at Hampton 29–30 Sep 2008 (T. Bronson *et al.*), single birds at Hampton 25 Jul 2009 (L. Medlock *et al.*) and on 31 Jul 2009 (B. Griffith *et al.*), 1–2 in the Hampton–Seabrook area 21 Aug to 6 Oct 2009 (A.E. and G.C. Robbins, P. Brown *et al.*), and the first known record for Star Island 31 May 2004 (M.G. Harvey *et al.*).

Inland. Only 4 reports in this category: the 1926 Grantham record and reports from Dover on 12 Dec 1968 (A.C. Borrer), at Manchester on 31 Aug 1967 (W. Riehl), and from late Aug to 15 Sep 1984 at Hancock (H.M. Cadot, O. Rhines).

Remarks. As noted by Masterson (2003b), this species has shown a marked increase in reports in New England due to a northward extension of its breeding range, especially 1945–1955, and its increasing regularity at Parker River National Wildlife Refuge 2000–2007, just a few miles south of the New Hampshire state boundary.

FAMILY THRESKIORNITHIDAE

White Ibis *Eudocimus albus*

Status. Vagrant. Two records. An adult was discovered and photographed 11 Sep 1969 (L.C. Rising *et mult.*) at Highland Lake, East Andover, and later seen by several others (photo in NHAQ 23 [3]: 101). One was seen at Rye 6 Aug 1984 (J.S. Fleming *et al.*) and later that day at Appledore Island, ME (A.C. Borrer), as it came to roost with Glossy Ibis; presumably the same bird seen coming ashore with Glossy Ibis at Wallis Sands 8 Aug 1984 (D.J.

Abbott). One hypothetical record for VT (C.C. Rimmer pers. comm), 1 record for ME (ME-BRC website, P.D. Vickery pers. comm.), and at least 23 records for MA (Veit and Petersen 1993, BO database 2011).

Glossy Ibis *Plegadis falcinellus*

Status. One early record. Has recently become a regular spring migrant, occasionally seen in summer to early fall; recorded only once in late summer. Not known to breed. Much reduced in numbers since about 2000.

Early report to 1950. The first state record was an adult at Stafford Ridge, Alton, in Oct 1858. It was collected by Dr. Charles Palmer and examined by C. F. Goodhue but apparently not preserved (Allen 1869–1870; Palmer 1871; Stearns 1887; Dearborn 1898, 1903; Allen 1903, 1909; Forbush 1925; Bagg and Eliot 1937). Erroneously recorded as a Wood Stork in *Forest and Stream*, 1876, Vol. 7: 325.

1950 to present. The second known state record was 1 at Walpole 18 Apr 1965 (D.W. Brainard *et al.*). Except for 1966 and 1970, it has been recorded in each year since. It will also probably continue to occur as a regular migrant because it began breeding on Wood and then on Stratton Island near Saco, ME, by 1972 (Finch 1972, Borrer and Holmes 1990) about 40 miles north of the New Hampshire border, and at least 20 pairs still did in 2010 (P.D. Vickery pers. comm.). In 1974 it began nesting on Appledore Island, ME, in the Isles of Shoals (A.C. Borrer *in* Foss 1994). However, the Appledore colony was decimated by introduced Raccoons by 2003 (Ellis *et al.* 2007) and none have nested there since. Extreme dates are from 27 Mar 1990 (K. Campbell) at Salem to 22 Sep 1973 (L.S. and E.K.D. Lewis) when 2 were found at Hampton. Peak spring coastal counts are 83 at Rye 17 Apr 1978 (R.A. Quinn, H.W. Parker) and 85 at Greenland 28 Apr 1996 (S.R. Mirick, P. Lacourse), numbers surely including both northbound migrants on their way to ME and some from Appledore. The number of nesting pairs on Appledore varied annually and ranged between 16 nests in 1979 to 34 nests in 1982 (Borrer and Holmes 1990). High count for Star Island is 39 on 3 Jun 1999 (R.W. Suomala *et al.*), and numbers in the 20–36 range were at White and Seavey Islands in Jul and Aug 2000 (D. Hayward, M. Charette) though the number there dropped to only 8 on 14 Jun 2001, 10 on 11 Jun 2004, and 7 there 11 Jun 2006 (all D. Hayward *et al.*). Spring and summer reports have declined since 2000 after the loss of the Appledore colony: only 3 in 2008 and 2009 and 2 in fall 2009.

Inland, earliest known spring arrival is 1 at Manchester 6 Apr 2008 (S. Geddes), and peak inland count is 5 at Charlestown 25 Apr 1967 (W.W. Kidder *et al.*). Northernmost report in the Connecticut River valley and for the state is 1 at West Stewartson 22 Apr 1976 (D. Kennard

et al.), and northernmost reports from the Merrimack River watershed are 3 at Squam Lake 1 May 1977 (Ridgely 1988), an immature at Meredith 18 Jun 1975 (H.L. Parker) and possibly the same bird at Plymouth 13 Aug 1975 (R. Norton). In 1965–1980, 6 were seen in the Merrimack River valley and central Lakes Region, 14 in the Connecticut River valley. Summer inland records include 1 at Concord 10 Aug 1982 (R.A. Quinn, T. Richards).

White-faced Ibis *Plegadis chihi*

Status. Vagrant from the south. Three records: 1 at Stratham 15 Apr 1995 (S.R. Mirick *et al.*), 1 there 17 Apr 2002 (D. Hughes *et al.*), and 1 at North Hampton 25 Apr 2010 (J. Lambert, L. Medlock *et al.*; photo). Five accepted records for ME (ME-BRC website), and at least 15 for MA (Veit and Petersen 1993, BO database 2010).

ORDER ACCIPITRIFORMES

FAMILY CATHARTIDAE

Black Vulture *Coragyps atratus*

Status. Rare but increasingly regular visitor from the south. Reports have increased since 1980, especially since 2000; most often found in spring in the interior.

Early reports to 1950. One supposedly shot at Randolph 17 Apr 1926 (G.H. Coulter) and 1 seen at Whitefield about 1 May 1926, both records reported to Forbush (1927) by W. G. Means. The bird collected at Randolph may be the mounted specimen (#733) now at UNH in Durham; A. C. Borrer (pers. comm.) was told it came from New Hampshire when he first arrived there. A mounted bird without data at the Acworth–Silsby Free Public Library taken 17 Feb 1887 was not certainly taken in New Hampshire as that collection contains other specimens from Louisiana. A bird shot in York County, ME, in spring of 1887 or 1888 must, however, have passed through New Hampshire to get there (Dearborn 1903).

1950 to present. The first state record since the 1926 reports is 1 found at Boscawen 4 Apr 1992 (C. and E. Foss, M. Rolfe). Twenty-four birds were reported in 13 different years 1992–2008, 21 of which were in spring and 4 of which were inland in 2008. Extreme spring dates are 1 at Hampton Falls 14 Feb 2011 (T. Young) to 29 Jun 2006 at Ossipee (J. Rhymer), the northernmost known site. Fall and winter reports include 1 at Keene 31 Aug 2008 (L. Tanino), 1 at Peterborough 15 Sep 2001 (I.C. MacLeod), 1 at Newmarket 10 Oct to 3 Nov 2009 (P. Brown, L. Kras *et al.*), 1 at Nashua 25 Oct 2008 (C. Sheridan), 1 at Amherst 4 Dec 2006 (T. Young), 1 at East Kingston 13–14 Dec 2009 (J. Lambert *et al.*), and 1 at Nashua 31 Dec 1994 (S. Larson, W. Hall) with very possibly the same bird there until at least 21 Apr 1995 (B. Harris).

Turkey Vulture *Cathartes aura*

Status. Regular and increasingly common spring migrant, summer resident and breeder, and fall migrant,

principally in the southern third of the state. Formerly considered only a casual visitor, there being only 3 records known prior to 1900 and only 2 more by 1940. Reported increasingly often 1940–1957 and regular since then.

Early reports to 1950. The first state record is of a female collected at Hampton Falls 6 or 7 Apr 1882 by Frank Percell, the specimen formerly in the mounted collection of the BSNH but now lost. Next recorded at North Weare in the spring of 1887 (Mr. Felch), an injured bird that remained in the area for several months. One was seen at Hampton Falls 15 May 1898 (W.E. Cram); 1 was shot at Jaffrey 30 Apr 1928 (W. Royce, Jr.) and mounted by G. P. Wellington; and 1 was seen at Squam Lake 10 Aug 1940 (K.W. Burke). One was seen at Harrisville 9 Apr 1941 (J.M. Abbott), and a flock of 6 was seen at Dublin in May 1941 (H. Williams). Two were seen at Ossipee 10 May 1943 (E.E. Pratt), 1 was shot at Bridgewater 12 Apr 1947 (Wallace 1951 *contra* Bagg and Parker 1951 and RNEB 1947), another was seen there 21 Jul 1947 (V.H. Hebert), and 2 were seen near there 12 Oct 1948 (V.H. Hebert). Aside from the birds at Squam Lake and Bridgewater in the Merrimack River valley and at Ossipee, through 1949 there were no records north of Cheshire, Hillsborough, or Rockingham Counties.

1950 to present. Major increase in reports.

Spring. Early 1950s reports include 1 seen at Mason 24 Apr 1953 (C. Wellman), 1 at Temple 16 May 1954 (T. and B.D. Richards), and 1 at Richmond 8 May 1955 (Brooks). Extreme early arrival known is 1 from 11 Feb 1990 at Walpole (L.J. Collett, R.E. Ritz) but usual first arrival is by early March. General arrival is by mid-March to early April in the southern half of the state where the species is concentrated through the summer, especially in the Connecticut River valley. Some evidence of migration in mid-April: 52 at Keene 11 Apr 2008 (L. Tanino). Occasionally in spring birds wander farther up the 2 major river valleys. First found as far north as Pittsburg 5 Jun 1994 (R. Andrews).



Summer and breeding. Two remained through the summer for the first time at Walpole in 1964 (W.W. Kidder *et al.*). Prior to 1965, the highest count had been 7 at 1 time, but 14 were seen in 1 day in late summer of that year (D. Webb), and nesting was strongly suspected but not proved.

Nesting was finally confirmed at Antrim in 1981 (Foss 1994): 2 adults were at a nest ledge 4 Apr, 2 young were present 6 Aug and were nearly ready to fledge 14 Aug (H.M. Cadot). In Lebanon, T. Levin photographed a dead chick and an unhatched egg on a ledge in Jun 1981. Additional nestings were documented in Hinsdale (1983), Warner (1985, 1986), and both Strafford and Weare (1986). In the *Atlas of Breeding Birds* project 1981–1986, Foss (1994) reported 6 confirmed breeding sites and 4 probable ones, the northernmost being near Lyme in Grafton County. Seventy-one possible breeding sites are also shown in the *Atlas* which are highly concentrated from the White Mountains south, though 1 is near Milan in central Coos County. In short, during the last 40 years this species has expanded its range from being merely a summer visitor to a widespread summer resident and breeder. Highest summer counts are 40 at the Concord dump 27 Jul 1989 (R.A. Quinn), but by 2006 as many as 65 were as far north as Lebanon 1 Jul (P.D. Hunt) and 72 were at Keene 10 Jul 2007 (R. Ritz). Breeding population is listed as increasing by Hunt (2009b). BBS data show a population trend increase averaging over 11% per year in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. Peak counts probably including migrants are 120 at Rochester 9 Oct 2003 (S.R. Mirick) and 100 at Keene 27 Sep 2006 (L. Tanino, A. Clark). Most birds leave by the end of October, though the number of reports after then has increased since 2000: 34 at Newmarket 3 Nov 2009 (L. Medlock *et al.*), 12 there 21 Nov 2009 (S.R. Mirick), 1 at New Castle 24 Nov 2002 (R.W. and M. Suomala), and

1 at Nashua 27 Dec 1987 (CBC). Peak migration period is the first 2 weeks of October (see Ruelas hawk migration chapter).

Winter. A possible overwintering bird or very early migrant was at Walpole 26 Jan to 5 Feb 1989 (V. Barrett). One was at Nashua 1 Feb 1988 (B. and M. Harris), possibly the same bird seen there just over a month earlier. One was at Concord 5 Feb 1991 (A. Tappan) and 1 at Andover 17 Jan 1994 (R. Leavitt). By 1995 and following years, small numbers were regularly found in the coastal region and the southern ends of the 2 major river valleys in January and February. Twenty-one birds were reported in Feb 2002 from 10 localities; 26 reported in Feb 2004 from 5 localities including 13 at once at Nashua on 20 Feb (E.A. Masterson); some of the birds in these 2 February reports are likely to have been early migrants. Reported as far north as Concord and Laconia in mid-Feb 2006 (v.o.).

FAMILY PANDIONIDAE

Osprey *Pandion haliaetus*

Status. Regular and common spring and fall migrant. Regular but local breeder nearly statewide. One winter record. A species of Special Concern in New Hampshire.

Early reports to 1950. First recorded for New Hampshire as the “Fish Hawk, *Falco haliaetus*,” by Belknap (1792) on the authority of a Mr. Peck. Next mentioned by Goodhue (1877a) as “common” in the Webster area, though he made no mention of local breeding. Brewster (1925) called it a “Common summer resident” of the Lake Umbagog region in 1871–1909, occurring there between extreme dates of 12 May (1897) and 10 Oct (1888) and breeding regularly at several localities in New Hampshire. He also mentions that the numbers seen there declined noticeably shortly after 1900 due to shooting and molestation of nests by humans. Read (1892) noted it as occurring at Swanzey. Chadbourne (1887) recorded 1 migrating at about 5500 feet on Mt. Jefferson 2 Sep 1884, the elevation record for the state.

Dearborn (1898) called it a “common migrant” in Belknap and Merrimack Counties in April and August and (1903) in the coastal region, particularly at Great Bay, though he did not think it bred in either area. Allen (1903) described it as, “A rather common spring and fall migrant along the coast and on the larger streams and lakes; also a rare summer resident,” in the northern parts of the state. Wright (1911) called it an “uncommon spring and fall migrant” in the Jefferson region, his latest fall record being 1 at Cherry Pond 5 Oct 1907.

White (1924b, 1937) detected little or no change in its



abundance in the Concord area from about 1900 to 1937, it being, "A common transient in the spring; a straggler in summer; a transient in small numbers in the early fall." He reported that the great majority of records there were in April and May, only a few birds being seen in fall, principally in September. The only nesting records known south of the White Mountains from this era are a pair near Manchester in 1926 and 1927 (A. McGowan). Griscom (1938) listed it as "Frequently seen" and still breeding at Lake Umbagog. Scott (1921) reports it nesting near Great Bay.

In the 1930s and 1940s it was a regular transient in both major river valleys from mid-April to mid-May, earliest being 1 at Concord 29 Mar 1938 (F.B. White). It was occasionally found in summer south of the White Mountains, as 2 at Hinsdale 3 Jul 1940 (E.N. Kirrmann) and 1 at Conway Lake 20 Jul 1947 (N.L. Hatch), though no nesting was documented at either place. Two were recorded from at least 5000 feet on Mt. Washington 14 Sep 1946 (S.K. Harris). In fall it was recorded regularly from early September through mid-October south of the mountains. The only published records for Coos County in either decade appear to be a pair nesting at the Connecticut Lakes and a few other locations (Smith 1979).

In summary, there were only 3 recorded nestings of Ospreys south of the White Mountains from 1877 to 1950,

though the species must have done so commonly in the central Lakes Region, at Great Bay, and around the borders of other large lakes in the south until colonial times and for a period thereafter. It appears to have nested continuously in the northern part of the state at least since the 1870s and to have been a relatively common seasonal migrant throughout 1877–1950, especially along the 2 major river valleys. Population declines in the early post-colonial period may have been due to removal of large trees then used as nest sites (WAP 2005).

1950 to present. Reflecting the dramatic decline in both the breeding population and the number of migrants in the northeastern United States due to pesticide contamination, the New Hampshire breeding population dropped sharply from the 1950s and 1960s into the late 1970s. The population largely recovered by the early 1990s and has expanded since 2000. Its breeding population is listed as increasing by Hunt (2009b).

Spring. Earliest known spring migrants are 1 at Tilton 13 Mar 1965 (A.E. Lajoie, H.B. Miller), 1 at Hinsdale 13 Mar 2011 (D. Adams), and 1 at Concord 17 Mar 2008 (R.W. Suomala). Mean arrival date 1952–2009 was 6 April, and peak migration period is the last 3 weeks of April and the first week of May. Highest count in this period is 19 at Seabrook 13 Apr 2008 (S.R. and J. Mirick), counts over 8 being unusual. Latest migrants usually pass through by the third week of May, only an occasional straggler found lingering in the southern part of the state after that, as 1 at Manchester 1 Jun 1980 (M.T. Martin) and 1 at Dover 5 Jun 1980 (R.A. Quinn), dates recorded before the presence of breeding pairs anywhere nearby.

Summer and breeding. Casual in late June and in July in the coastal region in the 1950s and 1960s, the only records being 1 at Wallis Sands 6 Jul 1954 (D.W. Finch) and 1 at Kensington 16 Jul 1969 (S.H. Perry). Birds presumed not to be breeding were also occasional in the interior southern part of the state at that time. Examples are 1 at Stoddard 28 Jun 1958 (D.W. Brainard), 1 at New Hampton 17 Jul 1958 (V.H. Hebert), 1 at Tilton 21 Jun 1959 (V.H. and R.C. Hebert), and 1 at Hopkinton 2 Jul 1967 (L.G. Phinney *et al.*). The effects of DDT and related pesticides caused a dramatic decline in Osprey breeding populations throughout the northeast United States in the 1950s and 1960s, and this was true in New Hampshire as well.

In 1977 there were only 3–4 nests in the state (Smith 1979), and from 1980 to 1990 almost the entire nesting population in the state was in the Lake Umbagog watershed. NHFG began serious monitoring of the species in 1980 (WAP 2005). As the effects of persistent pesticides declined and after predator guards were installed on nest trees, a gratifying increase in nesting success occurred as shown in the following table. In the *Atlas of Breeding Birds* project 1981–1986, Foss (1994) reports 10 con-

firmed and 3 probable nest sites, all in northern Coos County, including Lake Umbagog. The first nesting at Great Bay since the 1930s was recorded in Durham in 1989 (S.R. Mirick), the first nest in the Connecticut River watershed south of the White Mountains was found in 1993, and the first nest in the Merrimack River watershed was found in 1996 (WAP 2005). In 1994 there were 29 pairs, but the Lake Umbagog population dropped from 15 pairs in 1994 to 6 pairs in 2003, paralleling a similar drop in the breeding population of Common Loons there (Martin 2003). A pair nested successfully in Auburn in summer of 1999 (I.C. MacLeod) for the first time in that part of the state in many years. Excellent comparative maps showing changes in the number of pairs in each of the state's 5 watersheds appear in WAP (2005). The following data were compiled by ASNH personnel under contract with NHFG.

Year	#Territorial Pairs	#Successful Nests	#Young Fledged
1977	3–4	NA	NA
1980	6	6	2
1985	12	6	8
1990	26	22	25
1999	29	13	28
2000	34	24	40
2001	34	28	42
2002	31	26	40
2003	45	23	54
2004	43	26	53
2005	50	48	62
2006	54	32	62
2007	62	35	71
2008	68	40	87
2009	66	29	54
2010	67	42	88

Single birds wandered out to White and Seavey Islands 1 Jul 1999 and 12 Jul 2007 (D. Hayward *et al.*). Occasional single and possibly unmated birds have also been found irregularly from the White Mountains northward in breeding season. BBS data show a mean population trend increase of 6.6% per year in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. The first migrants regularly appear in the interior south of the White Mountains in the first week of August, though peak migration period is the last 3 weeks of September and the first week of October. Peak inland counts in this period have been 22 at Bristol 15 Sep 1971 (R.W. Smart), 26 at Deering 19 Sep 1999 (I.C. MacLeod), and 30 there 14 Sep 1969 (R.W. Smart). Inland counts over

10 in a day are uncommon and all such counts have been in the Merrimack River valley. Coastal counts have been much higher; highest have been 122 passing Odiorne Point 21 Sep 1997 (S.R. Mirick *et al.*) and 150 there 18 Sep 1999 (S.R. Mirick). In general, this species is a slightly more numerous and conspicuous migrant in fall, passing through in larger groups and more concentrated at hawkwatch sites and at the coast, whereas in spring the birds are more often seen singly or in small flocks and migration is spread over a wider front. It is an occasional transient at the Isles of Shoals in fall: 1 found within a few rods of the state boundary on Smuttynose Island, ME, 9 Oct 1954 (Libby 1955); and a late migrant on Star Island 13 Nov 1966 (ASNH field trip). Latest fall records are from the interior: 1 as far north as Littleton 11 Nov 1959 (R.J. Bradley), the latest in the Merrimack River valley being 1 at New Boston 13 Dec 1998 (M. and R.W. Suomala), and the latest in the Connecticut River valley being 1 at Lisbon 25 Nov 1980 (E. Laleme). Most numerous as a fall migrant from the first week of September to the first week of October with a modest peak in the third week of September (see Figure 3 in the Ruelas raptor migration chapter).

Winter. One bird was found at the coast 5 Feb 1963 (M.N. Dodge, J.B. Grant, K.E. Dymont), and a bird first found in Dec 1979 remained at Manchester until 15 Feb 1980 (M.T. Martin *et al.*).

FAMILY ACCIPITRIDAE

Swallow-tailed Kite *Elanoides forficatus*

Status. Vagrant. Four records: 1 seen in Franklin in 1875 by George Stolworthy, an experienced taxidermist and oologist, who watched it pick up a snake within 100 feet of him; 1 at New Hampton 15–25 May 1965 (V.H. Hebert *et mult.*; photo); 1 at Danville 5 May 1979 (E. Moses; photo); and 1 at Hinsdale 26 Apr 2011 (K. Benton). Two accepted records in VT (C.C. Rimmer pers. comm.); over 40 records for MA, virtually annual since 1995 (Veit and Petersen 1993, BO database 2010); and 4 accepted records for ME (ME-BRC website).

A report given by Allen (1903) of a bird reported by a very inexperienced observer 4 Jul 1887 is not accepted. An egg in the collection of the Ohio State University museum purporting to be of this species dated 29 Apr 1878, collected from a nest made of “[t]wigs lined with fine bark and a few leaves 70 ft. up in top of a tree” and collected by F. A. Marshall from a “[s]wamp near Franconia, N. H.,” represents a highly problematic record, at best, and was not accepted by the NHRBC.

Mississippi Kite *Ictinia mississippiensis*

Status. Rare visitor but recent local breeder; 2 nests found in each of 2008 and 2009 and at least 1 in 2010.

1950 to present. One at Peaked Hill in Bristol 16 Apr 1982 (S.A. Fogelman, P.A. Phipps *et al.*) and 1 at Durham 9 May 1982 (M.L. Davis); see Nikula (1982). One at Exeter 7 May 2004 (P. Lacourse) and 1 at Newmarket 30 May 2004 (R. Roy) seen carrying off a twig, possibly for a nest. One at Kensington 9 Jul 2006 (G.W. Gavutis, Jr.) and 1 in Kensington 24 Apr 2007 (D.W. Finch). Two adults found in Newmarket 28 May 2008 (D. Franceschini) followed by 14 Jun 2008 (B. Griffith, C. Wright); the pair built a nest and a third bird appeared 14 Jun; 2 young were observed 18 Jul but only 1 chick was raised which fledged 30 Aug; last seen 18 Sep. An apparent subadult helper was also seen at this nest but was not seen after Jun 30. A second nest found 1 Sep (D. Stahre) 1.6 miles from the first which contained a chick; both adults and young had left by 12 Sep. It seems very possible that the species nested at or near Newmarket 2004–2008. See Donsker (2008b) for a detailed history of the 2008 nestings.

Birds reappeared at both nest sites in Newmarket by 13 May 2009 (S.R. Mirick *et al.*), both pairs incubated eggs but only 1 nestling was raised; 4 birds seen at the Gonet Road site 18 Jul 2009 (L. Medlock), and 2 last seen there 31 Aug (S.R. Mirick). One was last seen in Newmarket 23 Aug 2009 (P. Brown). There appear to have been 2 pairs that nested in 2010, raising at least 1 chick at the Gonet Road location, and 2–3 birds were found at Newmarket in late May 2011 (S.R. and J. Mirick, P. Brown).

This species has been appearing in southeastern MA and Cape Cod with greater regularity since about 1980 reflecting a range expansion in the southeastern states (Veit and Petersen 1993). A pair nested in Connecticut for the first time in 2008. Four records for ME (ME-BRC website, P.D. Vickery pers. comm).

Bald Eagle *Haliaeetus leucocephalus*

Status. Regular spring and fall migrant in modest numbers. A regular but local summer resident. Greatly reduced as a migrant and breeder in the 1850–1900 period, numbers stable 1900 to 1950, followed by a slow increase. Now considered a Threatened species in New Hampshire.

Early reports to 1950. The first known state report is of at least 2 eagles, almost surely this species, seen at Hinsdale in a major hawk flight “20 or 21st” Sep 1756 (May 1960). Reported by Belknap (1792) as the “Bald Eagle, *Falco leucocephalus*.” Goodhue (1877a) described it as “Rare” in the Webster area, only being seen once or twice a year. Brewster (1925) said it occurred in the Lake Umbagog area “commonly and sometimes abundantly, in

spring, summer and autumn, yet unknown to breed,” though local tradition reported it breeding there until about 1850. Brewster reports that it was not at all unusual to see 6 in a morning near the outlet of the lake, and he once saw 25 in a day at the lake but just over the border in ME. In 1873–1895, young birds greatly outnumbered adults, but in 1908 75% of the birds he saw were adults. By 1909 numbers at the lake had declined sharply due to human disturbance.

Allen (1903) called it, “An uncommon summer resident in the central and northern parts of the state, and occasional at all seasons in the southeastern section.” He also reports a pair regularly at Newfound Lake in summer “for generations,” another nest site on Mt. Adams occupied continuously for about 25 years until about 1895, and several coastal winter records in 1882–1900. Dearborn (1898) reported it as “tolerably common every summer” in Belknap and Merrimack Counties, especially around Lake Winnepesaukee, but 5 years later he (1903) called it “comparatively rare” in the coastal region, usually seeing fewer than 1 a year. Thayer (1912) reported seeing 7 at once at Mt. Monadnock about 1860.

Wright (1911) found it, “An uncommon summer resident,” in the Jefferson region, having only 6 reports; and Goodhue (1922) merely reported that it had nested near Lake Winnepesaukee about 1880. White (1924b) considered it a rare spring and fall migrant at Concord and later he (1937) thought its status there unchanged, listing only 5 records in the entire 1900–1937 period. Jackson (1947) listed 1 collected at the Isles of Shoals 1 Aug 1931 without specifying in which state; this bird was mounted and is still on display at the Annie E. Woodman Institute, Dover.

Unsigned reports in the ASNH *Bulletin* for 1921 note that Bald Eagles nested near Lake Winnepesaukee until 1900–1905 and near Newfound Lake until the 1920s. Shelley (1935c) reports 10 at Great Bay 26 Jan 1934, the highest known count before 1950. A nest at Leonard Pond near Lake Umbagog had 2 adults and 3 young nearby 19 Aug 1948, and 2 young were on the same nest 30 Jun 1949 (T. Richards), the last known breeding record for the state before 1989. Highest elevation known is 1 at 5050 feet on Mt. Washington 18 Jun 1944 (D.E. Wade).

The above suggests that the species was probably common in precolonial times and in the more remote or less disturbed parts of New Hampshire from colonial times until the 1800s, probably retiring as a breeding species from most of the state south of the White Mountains by 1850 and from the White Mountains and northward by about 1900. The minimum number of pairs in the state in the early 1900s is estimated at about 10 (WAP 2005). It became uncommon as a migrant and as both a winter and summer resident statewide in 1900–1950.

1950 to present. Numbers remained stable at a low level until the 1980s when a gradual increase began.

Spring. Earliest spring migrants cannot be told with certainty from lingering wintering birds but are suspected by the end of February. Peak migration period is the last week of March and the first 3 weeks of April. Many nests are occupied by late March and some eggs hatch by mid-to late April. Peak counts due to late ice-out were 12 at Bedford 1 Mar 2003 (R. Tulloh) and 6 at Newmarket 22 Mar 2003 (S.R. Mirick *et al.*). Latest migrants, especially immature birds, are thought to pass through until mid-May but cannot be told from summering birds.

Summer and breeding. There was no known breeding 1948–1989. Typically a few are present in the White Mountain area and at favored localities farther north such as Dummer, Lake Umbagog, and the Connecticut Lakes. South of the mountains, nesting birds are regularly found along the Connecticut and Merrimack River valleys and in the central Lakes Region, but without great consistency from year to year at any given place. Casual at best in the coastal region at this season. Highest known count in summer is 6 at Lake Umbagog, Errol, 2 Aug 1997 (D. Stavros *et al.*).

The widespread population decline due to DDT and other pesticide contamination throughout the northeast was reflected in New Hampshire. Once pesticide use declined, a modest increase was observed, and a pair on a nest with 2 eggs was found at Lake Umbagog 15 Apr 1989 (ASNH data), remarkably in the very same tree last used 40 years earlier. A pair used the same nest 1990–1998; 7 at Errol 2 Aug 1998 included 2 fledged chicks (S.B. Turner, C.J. Martin *et al.*). A second nest was begun at Nelson in Jun 1998 (C.J. Martin *et al.*) and a third nest was built at Hinsdale in Apr 1999 (C.J. Martin). Apparently 3 territorial pairs were also in Dummer, Surry, and Littleton in 1999 (v.o.). The following data showing the increase in breeding pairs for selected years were compiled by ASNH personnel under contract with NHFG:

Year	#Territorial Pairs	#Active nests	#Successful Nests	#Young Fledged
1988	1	0	0	0
1992	1	1	1	2
1996	1	1	1	2
1998	2	1	1	2
1999	7	2	1	2
2000	6	4	1	2
2001	8	5	4	6
2002	7	4	1	1
2003	8	5	3	4
2004	8	7	6	11
2005	10	7	6	11
2006	12	11	10	21

2007	15	11	8	12
2008	15	13	12	24
2009	19	11	9	16
2010	22	14	9	17

Fall. Earliest known certain migrant is 1 at New Hampton 25 Aug 1953 (V.H. Hebert); a summer wanderer was at White and Seavey Islands 4 Aug 2000 (D. Hayward, M. Charette). Peak migration period is the last 3 weeks of September and the first week of October, birds occasionally seen in southbound hawk flights. Peak single-day fall count is 7 at Deering 19 Sep 1999 (I.C. MacLeod). A transient was noted at Star Island 6 Oct 1968 (R.W. Smart). Late migrants are irregularly noted into early November. Latest known record in the northern Connecticut River valley is 1 possibly wintering at Charlestown 12 Dec 1970 (*fide* W.W. Kidder), and latest known at the Isles of Shoals is 1 there 20 Dec 1970 (L.G. Phinney). Highest number of fall migrants are usually found in the second and third weeks of September (see Ruelas raptor migration chapter).

Winter. “By the late 1980s, upwards of 50 individuals were passing through New Hampshire in winter, with 20 to 25 staying at wintering areas on Great Bay, the Merrimack and Connecticut Rivers and the Lakes Region” (Foss 1994). Since then there has been a gradual increase; the NHFG winter eagle survey in 1981–1985 averaged 10 birds and in 2001–2004 averaged 50 birds (WAP 2005). Statewide CBC totals rose from only 5 in 1990 to 52 in 2009. Mean total wintering population survey results done by ASNH volunteers for NHFG were 66 in 1989–1990, 80+ in 1995–1996, and 91 in 2002–2003, 75 on 15–28 Feb 2005, 76 in Feb 15 to 1 Mar 2007, 67 in Jan 2008, and 74 seen 31 Dec 2008–14 Jan 2009.

Taxonomic note. The breeding population in the state has been referred to the race *alascanus* (Shelley1935c).

Northern Harrier *Circus cyaneus*

Status. Regular but uncommon spring and fall migrant, a regular but local and increasingly scarce summer resident and breeder, and a rare winter resident. Significantly reduced since 1875. Now considered an Endangered species in New Hampshire.

Early reports to 1950. Belknap’s (1792) “Large Brown Hawk, *Falco hudsonius*,” probably belongs here since he used the same specific epithet for a Harrier that Linnaeus did. The next reports for the state are those of Brewster (1925) who found it “Not uncommon as a summer resident” in 1871–1909 at Lake Umbagog but much more common as a fall migrant. He felt it probably bred in the area but never found a nest. Goodhue (1877a) considered it common in summer in the Webster area and a (regular?) breeder there.

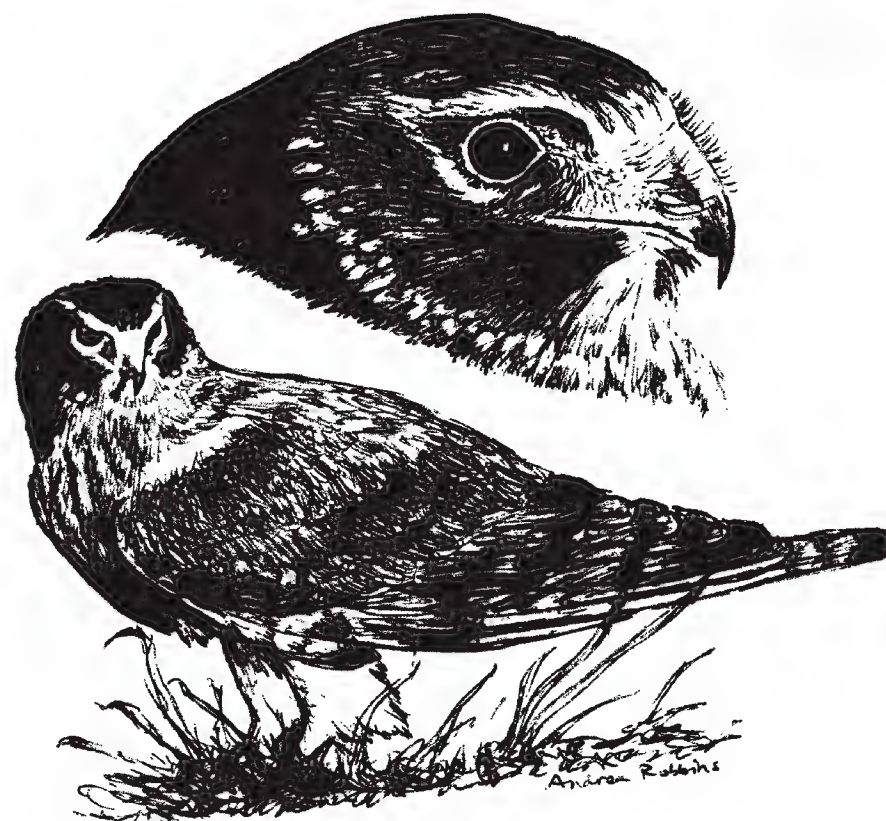
Dearborn (1898) described it as “a tolerably common summer resident” in Belknap and Merrimack Counties arriving, “about April 1, and remaining until November,” but he (1903) thought it “rather uncommon” in the coastal region. Allen (1903) called it, “An uncommon local summer resident,” in marshy areas, absent from the White Mountains in breeding season but common there in migration. His extreme dates were 16 Mar–12 Nov. Wright (1911) styled it, “An uncommon, though regular, summer resident,” in the Jefferson region and reported finding a nest at East Whitefield with 5 young 27 Jul 1905. White (1924b) called it an “uncommon summer resident” in the Concord area and 13 years later he (1937) thought its status unchanged. He felt it “rarely” bred near Concord and recorded a nest there 12 Jul 1930. Shelley (1935b) recorded a nest at East Westmoreland in summer of 1929 and the return of what he thought were the same birds in 1930 and 1931. Allan (1931) records a spring migrant at the Isles of Shoals 11 May 1930 but without noting in which state; Jackson (1947) reported migrants regularly there in August.

In the precolonial period, this species was probably restricted to bogs, fens, Beaver meadows, and isolated agricultural clearings along the major river valleys (WAP 2005). It certainly benefited significantly from the clearing of the native forest for agriculture, especially from about 1650 to the peak of farmland acreage in the 1880s. It was doubtless a much more numerous nester in the coastal marshes and interior river valleys before the arrival of many colonists than after these areas were settled. It is thought to have nested nearly statewide by the end of the 1880s (WAP 2005). From the early 1900s and especially the 1930s onward, its breeding population gradually declined due to forest succession, loss of wetlands, persecution, and pesticide impacts.

1950 to present. Numbers reported annually appear little changed from the 1930s, perhaps masking some decline as a breeder, but a modest increase as a migrant since 1990.

Spring. Earliest known inland arrival is 1 at Charlestown 4 Mar 1961 (W.W. Kidder *et al.*) and an early migrant or wintering bird at the coast 1 Mar 2008 at Seabrook (T. Bronson). Mean spring arrival date is 28 March in 1952–2009. Peak migration period is the last week of March and the first 3 weeks of April, highest count in this period being an exceptional 34 at Seabrook 13 Apr 2008 (S.R. and J. Mirick), there being no other single-day counts over 3. Migration is thought to be over by the third week of May. A possible late migrant was at White and Seavey Islands 3 Jun 2002 (D. Hayward *et al.*), the only known spring report from the Isles of Shoals.

Summer and breeding. Presumed nonbreeding birds have been found at scattered localities in the central Lakes Region, along the 2 major river valleys, and in favorable



habitat on the borders of larger lakes and ponds statewide at lower elevations. By the 1960s, Coos County was the stronghold for its breeding population (WAP 2005). Breeding has also been proved by the observation of young at Enfield (1957) and Danbury (1953, 1957, 1961, 1962). In the Breeding Bird Atlas project 1981–1986, breeding was confirmed at 22 locations, all but 5 of which were in northern Coos County; 11 other sites reported probable breeding, all but 3 of which were in Coos County; a small cluster of possible sites were in the coastal region (Foss 1994). Six nests in Coos County produced 12 confirmed young in Jun and Jul 1994 (A. Delorey, C.J. Martin *et al.*). “Statewide, harrier distributions did not change appreciably from the 1980s to the 1990s...and included 3 areas: Coos County, the Connecticut River valley between Piermont and Lyman, and a complex of wetlands in west-central New Hampshire” (WAP 2005). Despite the foregoing, BBS data show a significant increase of over 5% per year in both 1966–2009 and 1999–2009 (Appendix IV), suggesting the likelihood that BBS data for this species are not credible.

Fall. Earliest probable southbound migrant was 1 at Gilsum 31 Jul 1994 (M. Wright) and migrants are usually noted by the second week of August in the coastal region or at the Isles of Shoals. Peak migration period is typically the last week of September and the month of October, peak count being 36 at Rye 3 Oct 1998 (S.R. Mirick, P. Lacourse). The elevation record for the state is 1 at the Alpine Gardens on Mt. Washington at about 5500 feet 16 Oct 1969 (T. Richards). One was at Star Island 4 Oct 1970 (R.W. Smart), and a late migrant was there 21 Nov 1964 (ASNH field trip). Migration is thought to be over by the end of November, and with the exceptions given below, the latest known interior reports are 1 at Charlestown 29 Nov 1961 (R. Stickney), 1 at Warner 30 Nov 1967 (K.

Flewelling *et al.*), and 1 at Rumney 30 Nov 1992 (M. Zahorviko). Fall migrants are typically scattered almost evenly from early September to late October (see Ruelas raptor migration chapter).

Winter. Occasionally lingers in the coastal marshes or around Great Bay until late December but rarely is found at either area through the entire winter. An exception was the cold winter of 2000–2001 when at least 4 were in the coastal region from early December through February. Inland records are 1 at Plymouth 29 Dec 1957 (CBC), 1 at Westmoreland 6 Jan 2009 (C. Seifer), 1 at Marlow until late Jan 1958 (Foote), 1 through most of the 1961–1962 winter at Derry (H.A. Reynolds *et al.*), 1 at Hinsdale 31 Jan 2007 and 1 at Westmoreland 4 Feb 2007 (both E.A. Masterson), 1 at Swanzey 10 Feb 1990 (S. Earle), 1 at Haverhill 9 Jan to 4 Feb 2000 (F. Krauss), and 1 at Northumberland 7 Feb 1962 (Lehnert), the latter being the only known winter record north of the White Mountains.

Sharp-shinned Hawk *Accipiter striatus*

Status. Regular spring and fall migrant statewide in moderate numbers, typically more numerous in fall. Regular but uncommon winter resident but only south of the White Mountains. Regular but uncommon breeder from the White Mountains northward, but local and rare south of there. A major decline occurred from the late 1800s to 1980s, but a moderate increase followed reforestation 1990s to date.

Early reports to 1950. Morton (1632) recorded for what is now New Hampshire that “Sparhawkes there are also, the fairest and best shaped that I have ever beheld,” certainly a reference to either this species or Cooper’s Hawk. Goodhue (1877a) considered it common in summer, a few both wintering and breeding in the Webster area. Brewster (1925) provided no records specifically for New Hampshire from the Lake Umbagog area in 1871–1909, but he considered it a “not uncommon summer resident, and [a] rather frequent migratory visitor in early autumn” there. Sage (1885) reported 1 shot at Manchester 24 Jan 1885 (G.H. Walker), and Farmer (1892b) found a pair near Manchester in Jul 1892 which he presumed was nesting.

Dearborn (1898) found it a regular summer resident in Belknap and Merrimack Counties; he found nests at Alton about 1 Jun 1888 and at Gilmanton 18 Apr 1890. In the coastal region, Dearborn (1903) called it “rather common from April till late in November,” and (1905) considered it a “common migrant and occasional breeder” in Northfield. Allen (1903) called it a “common spring and fall migrant, and a less common summer resident; in the southern half of the state, a winter resident.” He also reported 1 at Tamworth 27 Dec 1898 (R.W.

Gray), and saw 1 himself near the summit of Mt. Washington 28 Aug 1901, an elevation record of about 6200 feet which still stands. He continues: “Throughout the White Mountain region this is by far the commonest hawk during the fall migration...especially [in] the months of August and September.”

Wright (1911) found it, “A summer resident; more common as a fall migrant,” in the Jefferson region, “infrequently seen in June and July, but...almost daily noted in August and September. Few remain in early October.” Rogers (1902–1919) found it with some regularity in the White Mountains and at the Connecticut Lakes in August and September of 1908, 1912, and 1914–1917. White (1924b) called it a “regular migrant, but not a numerous one” in the Concord region, 1 nesting known in 1924, and his earliest date for a presumed spring migrant being 1 Apr 1925. Later, White (1937) found its status as a migrant unchanged but considered it a “rare summer resident” in the same general area where Goodhue had found it common 60 years before. RNEB reports for 1936–1950 show it to be a regular visitor at winter bird feeders south of the White Mountains, moderately common as a spring migrant, an uncommon to rare breeder south of the White Mountains, and a common fall migrant nearly statewide.

In summary, the data suggest a decline in this species as a breeder south of the White Mountains from about 1875 to 1950 and probably some reduction as a migrant statewide in the same period. Its status in the White Mountains and northward has never been known in great detail. Its decline is almost the reverse of the pattern of increase shown by the Northern Goshawk during the same time period.

1950 to present. Continued modest decline to 1980s but moderate increase since, especially as a migrant. Population trend listed as increasing by Hunt (2012).

Spring. The first northbound migrants are suspected in the southern part of the state by the second or third week of March though indistinguishable from wintering birds. Peak spring migration period is April. Peak daily count in this period is 8 at New Hampton 27 Apr 1956 (R.W. Smart *et al.*) and 21 Apr 1967 (V.H. Hebert *et al.*). The latest spring migrants have been suspected as late as mid-May, though possible confusion with breeding birds cannot be entirely ruled out. Rare at Isles of Shoals; 1 at Star Island 11 May 1975 (K.C. Elkins *et al.*) and 1 there 29 May 1999 (R.W. Suomala).

Summer and breeding. South of the White Mountains, it has become a scarce and erratic nesting species, though possibly more frequent than proved recently, especially in well-forested parts of Cheshire, Hillsborough, Sullivan, and Merrimack Counties. Since 1950, it has been observed in the breeding season and was possibly nesting in East Kingston (1953), Andover (1960), Tamworth

(1960, 1961), Charlestown (1962), Nashua (1969), and many other towns. In the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or considered probable at 23 localities, 12 of which were in Coos County (Foss 1994). However, breeding was considered possible at 22 other localities south of the White Mountains, scattered widely across the state (Foss 1994). BBS data show a small population trend increase of 1.7% per year in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. Birds believed to be extreme early migrants have been noted in the last week of August on several occasions, examples being singles at New Hampton 23 Aug 1962 and 24 Aug 1958 (both V.H. and R.C. Hebert). Peak migration period statewide is the last 3 weeks of September, though a few probable migrants have been noted as late as mid-November. Peak fall counts are 239 at Rye 24 Sep 1993 and 238 there 23 Sep 1995 (both S.R. Mirick *et al.*), and 411 at Kittery, ME, seen flying into New Hampshire on 28 Sept 1975 (D.J. Abbott). An unusually late high count was 190 at Rye 20 Oct 2000 (S.R. Mirick). More usual high daily counts since 1990 have been in the 25–45 range. Seldom reported at the Isles of Shoals though probably regular in modest numbers; 1 at Star Island 30 Oct 1970 (D.W. Finch); a common migrant at Appledore Island, ME (R.W. Suomala pers. comm.). Migrant numbers are highest from the second week of September through the second week of October with no sharp peak (see Ruelas raptor migration chapter).

Winter. Regularly winters north to the southern foothills of the White Mountains (Tamworth, New Hampton, Bristol, Lyme). The only known winter records farther north are 1 each 2 Jan 1966 and 1 Jan 1972 (both R.J. Bradley) at Littleton in the Connecticut River valley and 1 at Berlin 6 Feb 1996 (K. Dube). Winter numbers vary, but birds are typically reported from 5–20 localities in the months of January and February.

Cooper's Hawk *Accipiter cooperii*

Status. Uncommon but regular spring and fall migrant, slightly more numerous in fall. Regularly winters in increasing numbers, principally south of the White Mountains. A regular but uncommon breeder statewide though more frequent from the White Mountains northward. Declined 1900–1950 but a modest increase 1975 to date.

Early reports to 1950. The earliest positive report for the state appears to be that of Goodhue (1877a) who called it a “Common resident through the summer” that bred regularly and was thought to winter in the Webster area. Chadbourne (1877) found it at an elevation of 2640 feet on Mt. Washington in July of both 1884 and 1886, still the highest elevation on record for the state. Brewster (1925) found it an “uncommon summer resident, lingering well into the autumn” at Lake Umbagog in 1871–

1909, but he provides only 1 record unequivocally from New Hampshire, 1 seen 14 Aug 1896, and noted very little migratory activity.

Dearborn (1898) called it “one of our commonest species” of raptors in Belknap and Merrimack Counties; he found 2 nests there and (1905) listed it as a “summer resident” at Northfield. In the coastal region, he (1903) called it “rather common” from April to November. Allen (1903) listed it as “A not uncommon spring and fall migrant and summer resident [that]...breeds regularly over the greater part of the state, and throughout the lower Canadian” zone. Neither of these 2 authors mentioned it as being known in winter.



Wright (1911) found it, “A summer resident; more common as a fall migrant,” in the Jefferson region, less frequently noticed at all seasons than the Sharp-shinned Hawk; he found 1 nest in Jun 1910 at Jefferson Highlands. White (1924b) said that it was formerly “fairly common” in the Concord area but “hardly continues so.” Later, White (1937) called it “scarce” there, most often noted in May and September on migration; he reported a nest and young at Hopkinton in May 1936.

In summary, it was apparently common south of the White Mountains in 1875–1900 and possibly before, but declined after that and became scarce there by 1935, particularly as a breeder. Its numbers seem to have suffered like those of the Sharp-shinned Hawk as the Northern Goshawk became more numerous in this area. In the 1936–1950 period, reports to RNEB show it to be rare in winter, a scarce spring migrant, a rare breeder statewide, and an uncommon fall migrant. In the White Mountains and northward, while apparently never common 1900–

1950, the population seems to have been relatively stable or declined slightly.

1950 to present. Further decline 1950 to about 1965 probably due at least in part to DDT poisoning (WAP 2005) followed by a modest increase as a breeder and migrant to the 1990s and a further increase to date, becoming locally common in some areas.

Spring. The earliest suspected migrants are noted in the second week of March, and peak spring migration period statewide is usually the last week of March through the third week of April, though stragglers probably pass through until the second week of May. Peak spring count in a day is 4 on Peaked Hill in Bristol 28 Apr 1990 (S.A. Fogleman).

Summer and breeding. Considered very rare in both migration and in summer, having declined sharply since 1950 (Smith 1979). It is probably about as widespread and numerous statewide today as the Sharp-shinned Hawk and has increased in some parts of the state since 1990s. Only 2 confirmed and 3 probable breeding sites were found during the *Atlas of Breeding Birds* project 1981–1986, though 17 possible locations were recorded (Foss 1994). Birds have been present in the breeding season and may have nested in East Wakefield (1953), Enfield (1996), Kensington (1999, 2001, 2004), Peterborough (1958), Fitzwilliam (1959), Danbury (1959), Concord (1960, 1961, 2005), Lebanon (1962), Lyman (2005), Sanbornton (1996), Newington (2005), Andover (1965), Nashua (1969), Bristol (1970), and Moultonborough (1972). Confirmed breeding at Concord in 1998 and 2001. From the White Mountains northward, it appears to be marginally more numerous than south of there. Breeding population listed as increasing in hardwoods and mixed forest since 1990 by Hunt (2009b) and with a positive trend regionally (Sauer 2008). BBS data show a moderate population trend increase averaging about 4.6% per year in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. Extreme early date for a presumed migrant is 1 at New Hampton 20 Aug 1964 (V.H. Hebert *et al.*) at a time when no summer resident birds were known there, and peak migration period is the last 3 weeks of September and the first week of October. Latest presumed migrants have been noted as late as the second week of November. Migrant numbers are highest from the third week of September through the first week of October (see Ruelas raptor migration chapter).

Winter. Numbers present at this season vary, but have increased recently in the state south of the White Mountains. Now more common in winter than Sharp-shinned Hawk in southeastern New Hampshire and as likely to be in the coastal region as in the interior. It is very rare north of the southern foothills of the White Mountains, the only known record being 1 shot at Pittsburg 3 Jan

1963 (F.T. Scott). Since that date not 1 has been recorded on the Pittsburg or Errol CBCs, the northernmost locations being Littleton and North Conway.

Northern Goshawk *Accipiter gentilis*

Status. Irregular spring and fall migrant in most parts of the state, numbers varying from year to year. Widespread breeding species which winters in modest numbers. Major increase since 1900 as reforestation occurred but some evidence of a slight decline since 1990s.

Early reports to 1950. The first state report is that of Morton (1632) who wrote that “the Goshawks are well shaped” in what is now probably New Hampshire. Goodhue (1877a) considered it rare at Webster, but possibly less so in winter. Brewster (1925) had only 11 records in 1888–1906 for the Lake Umbagog region where he considered it of “irregular and infrequent occurrence in autumn, winter and early spring, and possibly in summer.” Only 2 of those 11 reports were certainly in New Hamp-



shire: single young males found 22 Sep 1897 and 17 Oct 1889. He had more records for September than for October which might suggest migratory movement, but he did not assume this because of the possibility of local breeding. Dearborn (1898) listed it as “chiefly [a] winter visitant, some years being fairly common, while in others they are rare” in Belknap and Merrimack Counties. He records a nest at Dunbarton in 1897, apparently the first known south of the White Mountains. Dearborn (1903) considered it principally a winter visitor in the coastal region from October to April or May.

Allen (1903) added that it was a “rare summer resident” and probably a regular breeder from the White Moun-

tains northward. Hoffmann (1903) reports a nest with 2 young at Alstead 21 Jul 1902. Wright (1911) cites F. B. Spaulding's comment that it was "not a rare winter bird" in the Jefferson region, that it was occasionally caught in traps, and that 1 was seen in Lancaster in Feb 1908. Goodhue (1922) doubted it was still a summer resident in the Webster area. White (1924b) called it an "uncommon" winter visitor in the Concord area, but (1937) mentioned that it was possibly present there in the breeding seasons of 1933 and 1935, though confirmation of this was lacking. Shelley (1934a) reported the first breeding record for Cheshire County at Marlborough 24 May 1933 (J.W. Smith), and the second nest for that county was found at 1600 feet elevation on Mt. Monadnock 6 Mar 1941 (Abbott 1941a, 1941b, 1949). A nest was found near Colebrook, Coos County, 3 May 1948 (Mrs. Allen). Peak known fall migration count prior to 1950 was 16 at Corbin Park on 4 and 5 Nov 1939 (T. Barbour).

In summary, this species was probably relatively common in precolonial New Hampshire but declined significantly due to deforestation 1700–1900 for logging and agriculture (WAP 2005) and due to a great reduction in the population of the Passenger Pigeon which must have been an important food source. By the late 1880s, the available records suggest that the Northern Goshawk was rare except as a spring and fall migrant and winter resident from the White Mountains northward. From then until 1950, there seems to have been a steady general increase as a winter resident, migrant, and breeder, especially south of the White Mountains; this increase surely coincided with the return of larger caliber forest and repopulation by Ruffed Grouse, probably its favorite natural prey (Pearson *et al.* 1936). There appear to have been 3 significant winter incursions noted within the state: 1898–1899, 1906–1907, 1926–1927, and a small one in 1936–1937. However, other such incursions recorded for ME and MA also surely occurred in New Hampshire as well; see Palmer (1949).

1950 to present. Continuation of the slow increase, especially 1965–1975, followed by a slight decline 1990s to date. Population trend considered uncertain by Hunt (2012).

Spring. Extreme early spring migrants have been suspected by the first week of March, as 1 at New Hampton 4 Mar 1963 (V.H. Hebert). Peak spring migration period is usually the last 2 weeks of March and the first 2 weeks of April. Peak count in a day is 3 on each of 12 Apr 1961 at New Hampton (V.H. and R.C. Hebert), 19 Mar 1967 at Kensington (L.G. and E.W. Phinney), and 18 Apr 1975 (S. A. Fogleman). Migration is believed completed by mid-May.

Summer and breeding. Now more common as a breeder south of the White Mountains and known to have nested in every county in the state. Since 1950, breeding has

been confirmed by the observation of young in Grafton (1961), Walpole (1963), Dunbarton (1963, 1964), Charlestown (1964, 1965), Center Harbor (1967), and Tamworth (1968). In 1981–1986, breeding was confirmed or considered probable at 43 locations, all but 4 south of the White Mountains, and was considered possible at another 14 locations also all south of the White Mountains (Foss 1994). In all, these observations suggest a significant increase in nesting activity south of the White Mountains since 1960. An adult caught and killed an adult Broad-winged Hawk at Holderness 6 Aug 1952 (J.B. May). Four nests were found in the White Mountain National Forest in 2001. See Costello and Yamasaki (2007) for a summary of breeding research and habitat selection for this species in New Hampshire. An excellent distribution map is in WAP (2005). BBS data are so few that virtually no change in population is indicated 1966–2009 and a statistically sharp decline is suggested in 1999–2009 (Appendix IV), suggesting the 1999–2000 data are not reliable.

Fall. Extreme early fall migrants are not distinguishable with certainty from local breeding birds except at favored migration points. The earliest known such probable migrant is 1 at Little Round Top, Bristol, 10 Sept 1975 (E.W. Phinney *et al.*). Peak migration period is typically the last 2 weeks of October and the first 2 weeks of November, though in many seasons apparent migratory activity is no greater in this period than before or after. Peak fall count in a day is 11 at Bristol 5 Oct 1975 (E.W. Phinney *et al.*). Birds thought to be migrants have been recorded as late as 25 Nov 1958 at New Hampton (R.W. Smart *et al.*) and 27 Nov 2004 at Hillsborough (I.C. MacLeod), but in many years migrants certainly arrive from the north later than these dates, possibly even into January, though local wandering of winter residents makes confirmation of this problematical. The only significant major flight year since 1950 has been 1975–1976, the great incursion of the 1972–1973 winter in the midwestern United States not being reflected in New England. Highest migration period is from the second through the last week of October (see Ruelas raptor migration chapter).

Winter. This species has typically been reported from 8–15 localities statewide through the months of January and February 1950–1990 but only 2–7 localities since about 2000, less frequently in the coastal region than in other areas south of the White Mountains.

Red-shouldered Hawk *Buteo lineatus*

Status. Regular but uncommon spring and fall migrant, slightly more numerous in fall. Regular but slowly declining summer resident and breeder. Rare winter resident, principally in the coastal region, rarely inland. Increased

rapidly from about 1880 to about 1920, declined modestly to about 1950 and has stabilized since.

Early reports to 1950. The earliest known report is that of Goodhue (1877a) who described it as a “resident, least abundant in winter,” also regularly breeding in the Webster area. In the Lake Umbagog region, Brewster (1925) had only 2 records for this species before 1900, 1 of which was for New Hampshire, a bird found shot near the outlet of the lake in “early October, 1889.” He gives no further specific New Hampshire records but does mention that it became established at the lake just over the border in ME by Jun 1909. He also points out that the pattern of its invasion as a breeder just as the Red-tailed Hawk disappeared was the same that he had observed earlier in eastern MA, a pattern possibly repeated over much of New Hampshire in 1890–1910.

Dearborn (1898) listed it as “commoner in most localities than the Red-tail” in Belknap and Merrimack Counties, especially in the Merrimack River valley where it was “plentiful while Red-tails are rare indeed during the breeding season.” In the coastal region, Dearborn (1903) considered it “common...from the last of March till November,” breeding commonly. In Northfield, Dearborn (1905) called it the “commonest” *Buteo* present. In contrast, Allen (1903) considered it, “An uncommon permanent resident at the lower altitudes...[in] the southern and central parts of the state,” and “rare so far up as the White Mountains.” While at this time it was not common in the north, Dearborn’s comments based on first-hand knowledge of the state suggest that Allen’s description of its status relied on outdated information.

Wright (1911) called it “An uncommon resident” in the Jefferson area but says that F. B. Spaulding had listed it for Lancaster and even suspected it of nesting there, though he had not listed it for that area in 1903 according to Allen (1903). Goodhue (1922) considered it the “most common hawk found in the state,” and White (1924b) called it “A regular summer resident, rather common ‘for a hawk,’” regularly breeding in the Concord area. However, 13 years later White (1937) referred to it as “A regular summer resident in small numbers.” Griscom (1938) called it “a regular summer resident at the southern end of” Lake Umbagog. In 1936–1949, reports to RNEB showed it to be a regular spring and fall migrant and a widespread resident in summer. A high spring count of 11 was at Hanover 19 May 1940 (R.L. Weaver), and a late northern Connecticut River valley report was 1 at Monroe 5 Nov 1944 (R.B. Emery *et al.*).

In summary, this hawk appears to have been regular but not common in the southern and central parts of the state until about 1880, after which it appears to have increased significantly, becoming as common as it ever has been by 1920. It seems to have remained the commoner of the 2 larger *Buteos* south of the White Mountains

through the 1930s and only began to decline slightly there as the Red-tail began to increase in the 1940s. From the White Mountains northward, it apparently was rare until about 1900 after which it increased but never became as common as in the south. It has always been an uncommon to rare wintering bird.

1950 to present. Slight decline from 1950 to about 1960, following which year the number of breeding birds and migrants seems to have stabilized, possibly at pre-1880 levels.

Spring. Earliest known spring arrivals for a bird thought not to have wintered was 1 at Kensington 1 Mar 2003 (G.W. Gavutis, Jr.) and inland at Antrim 2 Mar 1955 (E.



McCabe). Mean arrival date 1952–2009 was 16 March, and peak migration period is typically the last 2 weeks of March and the first 2 weeks of April. Peak known spring count is a total of 32 on 19 and 20 Mar 1995 at Deering (I.C. MacLeod). Latest migrants probably occur into mid-May but cannot be distinguished from summering birds.

Summer and breeding. Uncommon and local south of the White Mountains. An endangered species conference thought it had declined sharply and should be considered “threatened” in 1979, but clearly the participants did not have adequate data (Smith 1979). In the 1981–1986 period, breeding was confirmed or considered probable at 62 localities, all but 3 south of the White Mountains, and in all 10 counties; it was considered a possible nester in

40 other locations, all but 10 of which were south of the White Mountains (Foss 1994). Therefore, though it may be less common than in 1920, there appears to be a healthy breeding population, even though it is near the northern limit of its breeding range in northern New Hampshire. The state population was estimated at 1400–1600 birds and it was “most common in the Sebago–Osipee Hills, Coastal Plain, and southern New Hampshire uplands” (WAP 2005). BBS data show a moderate population trend decline in 1966–2009 but a significant decline of 6.2% per year in 1999–2009 (Appendix IV).

Fall. Earliest southbound migrants possibly appear by the third week of August but cannot be told with certainty from local summer residents. Highest migrant numbers are usually found surprisingly late from the second through the last weeks of October (see Ruelas hawk migration chapter). Latest record for the White Mountain region and northward is 1 at Pittsburg 30 Sep 1958 (W.P. Hill). Elsewhere, only stragglers or wintering birds are found after 15 December.

Winter. Occasionally winters in the coastal region, usually within 10 miles of the ocean, numbers varying from none to as many as 3 in the 1969–1970 season. There are few interior winter records though the number has increased noticeably since 2000: 1 at Nashua 2 Jan 1954 (T. Richards), 1 at Concord 13 Jan 1962 (A.E. Lajoie *et al.*), 1 at Nelson 9 Feb 1965 (S. Partridge), 1 at Charlestown 27 Dec 1970 (*fide* W.W. Kidder), the northernmost at Tamworth 30 Dec 2002 (D.W. Finch), 1 at Bristol 12 Jan 1971 (V.S. Wright), 1 at Chester 23 Jan 1994 (A. and B. Delorey), 1 at Manchester 24 Feb 1996 (G. Mitchell), 1 at Lee 2 Jan 2009 (A. Tappan), 1 at Hudson 15 Jan 1999 (L. and J. Kegley), 1 at Hudson 30 Dec 2002 to 21 Feb 2003 (C. and E. Laffin), 1 at Nashua 2 Feb 2009 (C. Sheridan), 1 at Merrimack 6 Feb 2008 (T. Young), and 1 at Chester 8–19 Feb 2003 (A. and B. Delorey).

Broad-winged Hawk *Buteo platypterus*

Status. Common spring and fall migrant, occasionally abundant and always more numerous in fall. Common summer resident and breeder statewide. One old winter record.

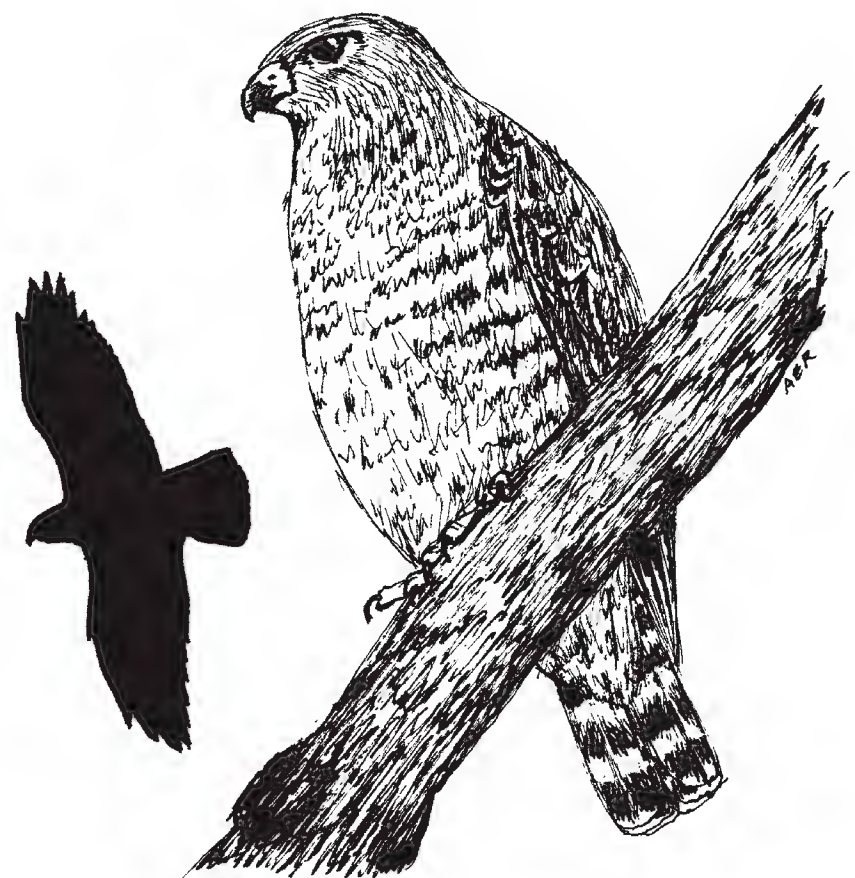
Early reports to 1950. A large flight of what was surely primarily this species estimated at perhaps 4000 birds was recorded at Hinsdale “20 or 21st” Sep 1756, by far the earliest report for the state (May 1960). Goodhue (1877a) called it “rare” in the Webster area. Brewster (1925) considered it a “common summer resident” and breeder in the Lake Umbagog region in 1871–1909, his extreme dates there being from 11 May (1887) to 30 Oct (1884), though these dates were not necessarily recorded in New Hampshire. He specifically mentions that its numbers

did not seem to have changed throughout the period of his visits there.

In contrast, Dearborn (1898) considered it “not common” in Belknap and Merrimack Counties, having only ever seen 2 there. Likewise, in the coastal region, Dearborn (1903) only ever saw 1, a bird shot in Madbury in September, though he expected it as a migrant in May, August, and September. Dearborn (1905) called it an “occasional breeder” in Northfield.

Allen (1903) described it as “A fairly common summer resident...of the sub-Canadian [zone]. In the White Mountain region and northward, it is the commonest breeding hawk, but in central and southern New Hampshire it is less common except...[in] the western part of the state.” He noted a nest at Hollis (*fide* W.H. Fox), reported it as common about Mt. Monadnock (*fide* G.H. Thayer), and said that “[i]n the White Mountains it breeds...up to the limit of large tree growth, about 2,500 feet.” Wright (1911) found it a “common summer resident” in the Jefferson region, his latest fall record being 9 Oct 1905.

Goodhue (1922) related that “To within the last 20 years I have considered this a rare hawk and one seldom seen [but] within the last few years it has become more plenty and their nests have been found several times” in the Concord–Webster area. McGowan (1927) reports the only accepted winter record, 1 collected at the Manchester city dump 23 Jan 1927. White (1924b) called it “not uncommon, occurring as a summer resident” and presumably breeding in the Concord region. Later, White (1937) considered it “somewhat common” there, nests having been found in 1927 and 1936.



The above accounts suggest that this species was probably common from the White Mountains northward and in the hilly country in the western part of the state at least since about 1870. In the Merrimack River valley from the central Lakes Region south and eastward to the coast, it appears to have been rare in 1875, uncommon by 1900, and moderately common by 1935, this pattern of increase surely related to the appearance of second-growth forest acceptable as nest sites and increased legal protection.

1950 to present. Significant increase in number of fall migrants reported, especially since 1960, surely due in part to an increase in hawkwatching.

Spring. Extreme early arrival known is 1 at Durham 24 Mar 1964 (Kennedy *et al.*), the next earliest date being 26 Mar 1952 at Walpole (D.W. Brainard *et al.*). Mean first arrival date 1952–2009 was 16 April, and peak migration period is the last 3 weeks of April and the first week of May. Peak spring count is 355 at New Hampton on 26 Apr 1961 (V.H. Hebert *et al.*), though the second highest is only 87 at Concord 27 Apr 1994 (I.C. MacLeod), and spring counts over 40 are unusual. Extreme late migrants cannot be told from summer residents. An unusual dark morph bird was photographed at Durham 31 May 2009 (D. Markey).

Summer and breeding. A slight decline in the breeding population south of the White Mountains may have occurred since 1950, but the species is still a common breeder in every county, perhaps very slightly less so north of the White Mountains. In the *Atlas of Breeding Birds* project 1981–1986, 142 confirmed or probable breeding locations were located statewide, and another 48 possible nest locations were also found (Foss 1994). The elevation record for the state was 1 at about 5000 feet elevation and above treeline at Lake of the Clouds 22 Jul 1999 (C.J. Martin *et al.*). Breeding population is listed as stable in hardwoods and mixed forest since 1990 by Hunt (2009b). BBS data show less than a 1% population trend decline per year in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. The earliest migrants are suspected in the last 2 weeks of August, the only unequivocal record being 2 at Star Island 21 Aug 2000 (R.W. and M. Suomala). Period of highest fall migration period is the last 3 weeks of September with a sharp peak in mid-month (see Ruelas raptor migration chapter). No daily counts equalling 1000 or more were known until 1960 and 1961 and then not again until 1965, but such counts were made each year 1968–1972 and 4 times in 1972. Highest single day totals for 1 locality are now 2500 at Goffstown in 2 hours on 17 Sep 1970 (H.W. Parker), 2537 at Bristol 14 Sep 1969 (R.W. Smart *et al.*), 3766 at Kidder Peak 12 Sep 1980 (*fide* D.M. MacRae), 3808 at Bristol 15 Sep 1971 (R.W. Smart *et al.*), 4097 at New Boston 15 Sep 1994 (S.A. Fogelman),

and 4314 at Deering 16 Sep 1993 (I.C. MacLeod). All these high counts were made in the Merrimack River valley. On 19 Sep 1999 alone, a record of over 10,000 birds were recorded: 7688 in Farmington (S. Snyder *et al.*), 1097 in Deering (I.C. MacLeod), and 1265 in Peterborough (I. Malo). Latest fall records known are 1 far north at Pittsburg 25 Oct 1952 (D. Ross *et al.*), 1 at Lincoln in the White Mountains 27 Oct 1957 (H.C. McDade), and 1 at Hancock 28 Nov 1957 (P. Howe).

Swainson's Hawk *Buteo swainsoni*

Status. Two records, both considered hypothetical due to the lack of a photograph, specimen, or 3 previously experienced observers being present at the time. Casual visitor from the west, once in fall and once in spring.

An adult closely studied and well described at Charlestown 23 Sep 1967 (G. Adams, F. Adams, W.W. Kidder, G.L. Kidder). Two migrating with other hawks at Little Round Top, Bristol, 13 Apr 1984 (S.A. Fogelman). Two accepted records for VT (C.C. Rimmer pers. comm.), at least 20 accepted records since 1955 in MA (Veit and Petersen 1993, BO database 2010), and over 10 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Red-tailed Hawk *Buteo jamaicensis*

Status. Regular spring and fall migrant, somewhat more numerous in fall; regular breeder statewide; winters in moderate numbers. Declined significantly from 1890 to the 1920s by which time it was uncommon to rare; began increasing by 1940 and is now fairly common.

Early reports to 1950. The “Hen Hawk, *Falco sparverius*?” reported by Belknap (1792) could have applied to this or several other large hawks despite his specific epithet being the same as that for American Kestrel. The first modern report for the state is that of Brewster (1925) in 1871–1909. Though he provides no specific New Hampshire localities, he notes that, “In the Umbagog region it occurred commonly enough up to about the year 1890, and not uncommonly up to 1894 or 1895, since when I have noted it but rarely, the date of my latest observation being September 14, 1900.” While he never found a nest, the presence of “young presumably of local origin in August and September” convinced him that it bred regularly until about 1895. As reported by Griscom (1938), it had still not returned to Umbagog as a breeder by 1936.

Goodhue (1877a) described it as a “[c]ommon summer resident” that bred regularly in the Webster area, a few remaining through the winter. Dearborn (1898) gave it as a “regular summer visitor” to hilly parts of Belknap and Merrimack Counties; he also mentions 1 shot in Gilmanton on 20 Jan 1894. In the coastal region, Dear-

born (1903) considered it a regular and common spring and fall migrant, but thought it did not nest there. Allen (1903) thought it an “uncommon, though generally distributed permanent resident of the lower Canadian” zone statewide. He also noted that it wintered “so far north at least as the southern valleys of the White Mountains.”

Wright (1911) found it a regular breeder and migrant in the Jefferson area, mentioning 7 migrating over Meadows 30 Aug 1910. White (1924b) listed it as “Not an uncommon resident once, but becoming scarce of late” in the Concord area. Later he (1937) said that though it used to breed, for “many years now, this species has been a rare transient, almost exclusively in October and November.” The northernmost known late winter record is 1 at 3300 feet elevation on Big Bicksford Mountain, Franconia, 16 Feb 1949 (T. Richards).

The above suggests that this species was relatively common statewide until about 1900, after which it declined in many areas and became rare even as a migrant in the central part of the state by 1920. It continued to be a scarce but regular breeder and transient in the White Mountains and began to increase slightly there and elsewhere in the northern parts of the state through the 1940s.

1950 to present. Major increase as both a migrant and breeder in this period, especially after 1965.

Spring. An early migrant; some birds are present through the winter, and suspected migrants are always noted by the first week of March. Peak migration period is the last 2 weeks of March and the first 2 weeks of April, a few late migrants probably still passing through until early May but are indistinguishable from nesting birds. Peak spring count is 35 at Hillsborough 26 Mar 2004 (I.C. MacLeod), though daily counts over 8 are unusual.

Summer and breeding. Now a regular and common summer resident nearly statewide. In 1950–2009, breeding has been proved by the observation of young in Monroe (1959), New Hampton (1965, 1966, 1973), Epsom (1969), and Andover (1974), but birds have been recorded during the nesting season in at least 48 other localities and doubtless bred at many of them. In the *Breeding Bird Atlas* project 1981–1986, breeding was confirmed or thought probable at 58 locations statewide and possible breeding was suspected at 59 other localities (Foss 1994). The known elevation record for the state is 1 at about 5600 feet elevation on Mt. Washington 18 Jun 1962 (A.R. Keith *et al.*). BBS data show a modest population trend increase per year in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. The earliest migrants have been suspected in the coastal region by the last week of August, though some birds may start moving before that farther north. Some migrants are always noted by the second week of September,

and peak migration period is the last 3 weeks of October and the first week of November (see Ruelas raptor migration chapter). Peak daily count in this period before 1980 was only 37 at Bristol 31 Oct 1972 (V.S. Wright) and counts over 10 were unusual, but have been much higher since: 114 at Lebanon 13 Oct 1993 and 242 there 23 Oct 1993 (D. Crook), both in the Connecticut River valley. Occasionally there is a late coastal flight: 30 at Rye 7 Nov 1999 (G.C. Robbins *et al.*). Latest migrants pass through until late November, the latest presumed migrant being 1 at New Hampton 12 Dec 1958 (V.H. Hebert).

Winter. Common in the coastal region and in the interior in the 2 major river valleys north at least to the latitude of Concord. Less frequently birds have wandered farther north, usually in the 2 major river valleys, extreme points being Hanover (1967) and New Hampton (1957, 1963), at Pittsburg 22 Dec 1950 (F.T. Scott) and 4 there 19 Dec 2006 (R.A. Quinn), at Errol 2 Jan 1994 (CBC) and 3 there 20 Dec 2006 (R.A. Quinn), along with the 1949 record mentioned above. Peak winter count is 19 on the Concord CBC 17 Dec 2006 (R.A. Quinn *et al.*); the Concord CBC has averaged 12 per year 2000–2009 (*fide* R.A. Quinn).

Rough-legged Hawk *Buteo lagopus*

Status. Irregular and uncommon spring and fall transient and rare winter resident. Greatly reduced as a migrant since about 1870. Two accepted reports of summer stragglers.

Early reports to 1950. First recorded for the state by Goodhue (1877a, 1885) who called it “Not very common” in the Webster area, only a few found in fall and winter, 1 black morph bird being noted in “the winter of 1875.” Brewster (1925) never recorded it for New Hampshire in the Lake Umbagog region 1871–1909 and had only 1 record for ME. But he mentions that the Connecticut River valley was “one of its principal routes of migration” in MA and that the species wintered commonly at Northampton. Griscom and Snyder (1955) refer to it as an “abundant” winter resident in the Connecticut River valley in MA 1870–1887 at which time it must also have been a very common migrant in the same valley farther north in New Hampshire. Unfortunately, as noted by Brewster (1925), the birds were systematically hunted at Northampton, up to 68 being shot in 1 winter, and almost none were left by 1890.

Dearborn (1898) called it a “rare migrant” in Belknap and Merrimack Counties, never having seen 1 himself, but he related the report of a Mr. Henry Osgood of “a large number that passed in loose flocks over Catamount mountain one day late in November a few years ago.” Though the birds seen might not have been this species, the lateness of the migration is suggestive, and Mr. Os-

good did possess a mounted melanistic bird taken near Pittsfield. In the coastal region, Dearborn (1903) cited the report of S. A. Shaw that it was a “regular early spring and late fall migrant at Hampton.” Cram (1899) reported an “occasional” 1 at Hampton Falls in Dec 1898, and a photograph of 1 taken at Hampton is in Dow (1893).

Allen (1903) called it “An uncommon fall and winter visitant” in the interior and at the coast, citing a record at Hampton Falls as late as 6 May 1895 (W.E. Cram). Wright (1911) found it “An uncommon fall and winter visitant” in the Jefferson region, his earliest record in fall being a black morph bird 12 Sep 1908, and the only spring record he had being 1 shot near Lancaster 18 Apr 1906 (*fide* F.B. Spaulding).

Lord (1918) recorded 1 in the Hanover area 22 Feb 1917, though not positively in New Hampshire. Goodhue (1922) remarked that this species is “seldom seen in central New Hampshire. It is more common about the marshes near the coast.” Remarkably, White (1924b, 1937) did not record it at all for the Concord area, suggesting that it was very rare there from about 1900 to at least 1937, though he did find it at Seabrook and Rye 26 and 29 Oct 1929 respectively. Reports submitted to RNEB in 1936–1949 show a declining number of records between September and April, mostly in the Merrimack River valley and the coastal region.

The above suggests that this hawk was once a common migrant and a regular winter visitor in the Connecticut River valley and possibly also in the Merrimack River valley, but that as early as the 1890s it was greatly reduced as a transient and probably occasional at best in winter. In the 1900–1950 period the number of migrants remained small, and the coastal marshes seem to be the only area where it wintered regularly.

1950 to present. Continued decline in this period.

Fall. Formerly arrived regularly in September or October until about 1980, earliest arrival dates being 11 Sep 1958 (D. Briggs) at Portsmouth, 11 Sep 1963 (J.R. Warren) at Jackson, and 12 Sep 1964 (T. Richards) at Stewartstown. Since then has become much less numerous and now is reported at most only a couple of times each fall. To the extent a peak migration period can be described, it is the last 2 weeks of October and the first 3 weeks of November, though in some years the first fall migrant of the season has not been noted until December. Peak fall count is 9 at the coast 25 Oct 1964 (J.E. Cavanagh *et al.*), though counts over 2 are now rare. Since 1950, the majority of inland fall migrants have been observed in the Merrimack and Connecticut River valleys.

Winter. From 1–3 regularly wintered in the coastal marshes until the 1980s and high count was 7 there on 3 Jan 1981 (A.C. Borrer *et al.*), but numbers have been very sporadic since then with few to no wintering birds. Occasional single birds are found at the Isles of Shoals: 31

Dec 1965 (D.W. Finch *et al.*), 3 Jan 1971 (L.G. Phinney *et al.*), 23 Dec 1974 (L.G. Phinney *et al.*), and 4 Jan 1976 (L.G. Phinney *et al.*). In the interior, the latest known reports for the species north of the White Mountains are 1 at Cambridge 21–22 Dec 1960 (V.H. Hebert *et al.*), 1 at Pittsburg 23 Dec 1960 (F.T. Scott *et al.*), 1 at Errol 22 Dec. 1976 (D.W. Finch), and 1 at Whitefield 2 Jan 2002 (D. Govatski, C. Bretton). Other wintering birds are primarily found in the Merrimack River valley, the northernmost being 1 last seen at Sandwich 10 Jan 2004 (G. Dennis) and 1 at Center Harbor 12 Jan 2009 (J.P. Merrill, J. Lambert *et al.*). Winter records for the Connecticut River valley are 1 at Charlestown 19 Feb 1955 (T. Richards), 1 at Piermont 16 Feb 1996 (G. Ports), and 1 as far north as Haverhill 24 Jan 1981 (E.A. Emery) and 23 Feb 1997 (R.J. Bradley). In the first big flight in many years, an exceptional 18 birds were reported in late Jan to late Feb 2007; 7 from the coastal region, 3 from the Merrimack River valley, and 8 from the Connecticut River valley, including a high count of 4 at Westmoreland 12 Feb 2007 (E.A. Masterson). Five birds were present in the coastal region Jan–Feb 2008. Pandolfino and Wells (2009) document a shift of the winter distribution of this species away from New England probably related to an increase in Red-tailed Hawks at this season and more disturbance of traditional winter feeding habitat. Loss of open pasture and grassland habitat due to reforestation 1950 to date may also have been a factor.

Spring. The first birds suspected of being migrants from the south have been found in the first week of March, precise dates being obscured by the presence of wintering birds. Such an early probable migrant in the interior is 1 at Lebanon 6 Mar 1991 (P.D. Hunt). Peak spring migration period is the last 2 weeks of March and the first 2 weeks of April, the birds usually passing through singly; peak count is only 3 at Bristol 23 Apr 1975 (S.A. Fogleman). Migration is largely over by the end of April, but there are 8 May records, and the latest known spring reports are 1 at Livermore 1 Jun 1956 (V.H. and R.C. Hebert) and a black morph bird at New Hampton 6 Jun 1956 (V.H. and R.C. Hebert).

Summer. Four reports in the White Mountains area: 1 at Pinkham Notch 6 Aug 1951 (R.P. Fox *et al.*) and 1 at Randolph 27 Aug 1951 (J. Maddocks), possibly the same individual; 1 at Jackson 15 Jul 1965 (J.R. Warren *et al.*); and 1 at Shelburne 1 Aug 1965 (J.B. Grant), also possibly the same individual.

Golden Eagle *Aquila chrysaetos*

Status. Regular spring and fall migrant in small numbers. Historic breeder from the White Mountains or farther north, last proved breeding being in 1956. Very rare in winter. Apparently a very local and uncommon breeder in the mountains until about 1900; has been found to be

a regular transient since 1950. Now considered an Endangered species in New Hampshire.

Early reports to 1950. The first probable state report is that of Belknap (1792) who listed “Brown Eagle, *Falco fulvus*.” Next report was by Nuttall (1832, Vol. 1) who recorded seeing a young bird taken from its nest in the White Mountains in August of a preceding year. The next report is that of Audubon (1834, Vol. 2) who used 1 “caught in a spring-trap set for foxes on the white mountains of New Hampshire” in early Feb 1833 as the model for Plate 181 in his elephant folio, *The Birds of America*. Peabody (1840) also reports it present in the White Mountains.

Golden Eagles once nested in the North Conway area, having been reported there by Minot (1876) and by Hawes (1878) who found 2 young in a nest at White Horse Ledge 6 Jul 1876. However, this site was unoccupied the following year and is not known to have been used since. Brewster (1925) relates that a pair almost certainly of this species nested “on the face of a vertical cliff fronting on the Diamond River” several miles north of Errol “regularly up to about 1876, occasionally after that year, and for the last time about 1896” (*fide* W.H. Hart). Either these birds or some known to be breeding near Grafton Notch, ME, were probably the source of the following New Hampshire sight records by Brewster for the Lake Umbagog area: 1 on 4 Oct 1896, 1 circling over Mt. Dunstan 2 Jun 1897, and both an adult and a young bird of the year observed 21 Sep 1897. Brewster also notes that the records of eagles attributed to him by Maynard (1871) on Eagle Cliff above Profile Lake in Franconia Notch in the summers of 1867, 1868, and 1870 were in reality Peregrine Falcons, and he strongly suggests that the Golden Eagles reported as nesting in exactly the same eyrie up until 1855 (Baird, Brewer, and Ridgway 1874, Vol. 3) were almost certainly misidentified.

Dearborn (1898) listed it as a “rare visitant from the mountains” (*fide* C.F. Goodhue) to Belknap and Merrimack Counties, providing no specific records. Allen (1903) called it a “permanent resident, now become extremely rare and irregular,” his only recent records being 1 trapped at Bartlett 18 Feb 1893 (J.O. Cobb), 1 shot near Hollis 16 Sep 1881 (*fide* W.H. Fox), and 1 taken at a locality now lost 9 Oct 1899 (*fide* R. Hoffmann).

A mounted bird in the Minot–Sleeper Public Library in Bristol was shot locally in 1922 and given to the library by Samuel Ferguson. Goodhue (1922) considered it “almost accidental” in the state, adding that it was not known to nest there at the time. Shelley (1931a) reported 1 shot at West Chesterfield 14 Nov 1930 (*fide* Mrs. C. Davis), 1 near Hanover 24 Sept 1940 (C. Reynolds), and 1 at Gilmanton 18 Sept 1940 (J.M. Abbott). One immature well seen at Pittsburg 12 Sep 1947 (T. Richards).

1950 to present. In this period has become annual as

more extensive coverage of hawk watch sites such as that on Pack Monadnock has developed; most frequent as a fall migrant.

Spring. Earliest known spring arrivals are single birds at Pitcher Mountain on 7 and 10 Mar 2010 (L. Tanino); the latest probable spring migrant is 1 at Dover 1 Jun 1964 (D. Briggs). Other spring reports of presumed migrants away from the White Mountains have been found in the 30 March to 20 May period. MacLeod (2004) reports 3 sightings in May 1991–2003.

Summer and breeding. Since 1955 has been recorded in the White Mountains and farther north on 8 occasions in June, July, and August fairly far from known nesting sites. Two young were raised in 1952 and 1 in 1955 at localities deliberately suppressed to avoid disturbance. While the species has not been proved to have nested in New Hampshire since 1956 (Smith 1979, MacLeod 2004), the last known home range was occupied until 1982 (WAP 2005), and continued presence of a few birds in summer suggests that it may have maintained a territory nearby if not in New Hampshire. One immature seen in Fitzwilliam 4 Jul 1976 (H.B. Urie), 1 at Alton 6 Jul 1998 (J. and K. Aldrich), and an adult at Boscawen 29 Jul 1991 (R. Bollinger) were unusually far south in summer.

Fall. Earliest presumed migrants south of the White Mountains are 1 at New Hampton 7 Sep 1966 (R.W. Smart) and 1 at Pisgah Reserve 13 Sep 1978 (N. Weisenfeld *fide* H.M. Cadot). MacLeod (2004) lists 26 New Hampshire records in 1991–2003 of which 18 occurred in September and October, primarily in the Merrimack River valley. Eleven known November reports to as late as 22 Nov 2009 (J. Lambert). Ten were recorded at the Pack Monadnock Raptor Migration Observatory in Peterborough in 2006, 3 in 2009, and 12 in 2010, all but 1 in the last week of October and the first week of November.

Winter. Few reports at this season: 1 at Raymond 9 Dec 2003 (C. Moreno), 1 at Errol 16 Dec 2009 (CBC), at least 2 at the Second College Grant 19 Dec 2007 (C.J. Martin, P. Brown *et al.*), 1 at Errol 31 Dec 1983 (CBC), 1 at North Conway 4 Jan 2009 (CBC), and latest known is 1 at Hancock 7 Feb 1986 (O. Rhines). Two at the Bartlett town dump in the White Mountains 28 Dec 1962; 1 of these was so weak that it was captured by hand, kept and fed over the winter, and released at Bartlett in good health the following 28 May 1963 (A. Bellerose, R.G. Carpenter III).

Remarks. MacLeod (2004) mentions a recent increase in the breeding populations in Labrador and northern Quebec reported by Wheeler (2003) which is believed to account for the growth in the number of migrants reported at hawkwatch sites both in New Hampshire and elsewhere in the northeastern United States 1990–2002.

ORDER FALCONIFORMES

FAMILY FALCONIDAE

American Kestrel *Falco sparverius*

Status. Regular spring and fall migrant. Sparsely distributed summer resident and breeder nearly statewide but greatly reduced since 1990s. Very rare and local in the southern part of the state in winter, most records along the coast. A species of Special Concern in New Hampshire.

Early reports to 1950. The first report for the state was probably that of Belknap (1792) who listed the “Pigeon Hawk, *Falco subbuteo*,” on the authority of a Mr. Peck; while this species name is now used for the Eurasian Hobby, that species resembles our Kestrel in size and looks more like our Kestrel than the Merlin. Belknap (1792) also listed the “Hen Hawk, *Falco sparverius*?,” but the vernacular name suggests he was not referring to the Kestrel. Samuels (1867) reported finding 4 kestrel eggs in an old American Crow nest “about 25 miles north of Lake Umbagog” 11 Jun 1864, but he was probably, though not certainly, in ME at the time, and Palmer (1949) notes it is very doubtful the eggs were a kestrel’s anyway since that species is a hole nester. Goodhue (1877a) called it “Common in spring and fall” and reported finding 1 nest in the Webster area. Brewster (1925) considered it a “[c]ommon summer resident” 1871–1909 at Lake Umbagog, his extreme dates there being 13 May (1881) to 9 Oct (1889). He records that it bred regularly and was most numerous as a migrant in August and September.

Dearborn (1898) gave it as “common [in] spring and fall, and is now and then a resident through the summer” in Belknap and Merrimack Counties, most common there in mid-April and late September. In the coastal region, Dearborn (1903) found it a “summer resident in small numbers,” also breeding. Allen (1903), surprisingly and probably incorrectly, called it “[a]n uncommon spring and fall migrant and a rather rare summer resident of the Transition areas of the state, breeding sparingly in the valley bottoms well up towards the bases of the White Mountains.” He had but 1 breeding record at Intervale about 1895, but noted migrants in late August, some of which flew over peaks in the Presidential Range. This behavior was also reported by Chadbourne (1887) who recorded the known elevation record for the state, a bird at about 6250 feet on Mt. Washington 28 Aug 1901 (B. Torrey).

Wright (1911) considered it “[a] not uncommon summer resident and fall migrant” in the Jefferson area, his peak count being 7 at Riverton 18 Aug 1910. White (1924b, 1937) called it a “regular but not numerous summer resident; usually more common in the migrations;

casual in winter” in the Concord area, his extreme dates there being 11 Mar (1927) to 16 Nov (1927). Jackson (1947) said it was “common” on the coastal mainland, but he had only 1 record for the Isles of Shoals 5 Jul 1929, the state in which it was seen not being specified.

The above and reports sent to the RNEB 1936–1949 suggest that this species has been a common migrant and relatively common breeder in appropriate habitat for a century up to 1950, probably increasing also since 1900. It surely benefitted from the clearing of land for agriculture 1650–1880, during which time its population must have increased substantially from precolonial levels.

1950 to present. Continued common at least into the mid-1970s as a migrant and breeder and regular in winter. By 1990 some evidence of a decline in numbers of both migrants and breeders. It appears that this species’s invasion into cleared land during the deforestation period was a temporary occupation now being reversed as conditions more closely approximating the precolonial habitat of New Hampshire are returning. This suggests that it may not have been a very common or widespread species in New Hampshire before 1700. It has also been suggested that recent declines in its New England population may be due to predation by Cooper’s Hawks as the latter’s population has risen and due to habitat loss on its wintering grounds.

Spring. Earliest probable migrant is 1 at Chester 1 Mar 2007 (B. Folsom) though such early birds cannot be told with certainty from wintering ones. Mean arrival is 15 March, and peak migration period is the last 2 weeks of March and the first 3 weeks of April. Peak spring counts are an exceptional 102 migrating at Seabrook 13 Apr 2008 (S.R. and J. Mirick) and 24 at Newington 15 Apr 1991 (D.L. De Luca), there being no other known counts over 15. Leaving aside exceptional peak counts, this species is typically at least as common in the interior as a spring migrant as at the coast. Three migrants at White and Seavey Islands 29 Apr 2003 (D. Hayward *et mult.*). Migration is thought to be essentially over by mid-May though late migrants or stragglers have been suspected into mid-June.

Summer and breeding. Sparsely distributed nearly statewide south of the White Mountains, even occasionally found nesting in towns and cities, though least common in the White Mountains and southwest highlands. From the White Mountains northward it is more restricted to lower altitudes and river valleys in particular, but regularly occurs up to 3500 feet and occasionally higher. In the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or thought probable at 78 localities statewide and possible at another 46 sites (Foss

1994). First indication of fewer along BBS routes by 1975–1980; BBS data show modest population trend declines averaging about 3% per year in both 1966–2009 and 1999–2009 (Appendix IV). Breeding population listed as declining by Hunt (2009b).

Fall. Earliest suspected migrants are noted by the first or second week of August: 7 at Swanzy 6 Aug 2009 (L. Tanino) and 16 at Clarksville 9 Aug 2005 (D. Killam). Peak migration period is typically the month of September and the first week of October. Peak counts are 51 at Rye 18 Sep 1999 (S.R. Mirick, P. Lacourse), 88 at Rye 19 Sep 1993 (S.R. Mirick), and 107 at Rye 19 Sep 1993 (P. Lacourse). However, since 2000 fall numbers have dropped noticeably and there have been few high daily counts over 20. Like the Merlin, this species is typically reported more often as a coastal migrant in fall than in the interior, especially since 1990–2000; formerly it was more numerous in the Merrimack River valley. Seldom recorded from the Isles of Shoals, the high count there being 10 at Star Island 21 Sept 1975 (E.W. Phinney *et al.*). Most migrants are found from the second week of September through the first week of October (see Ruelas raptor migration chapter). Migration is thought to be essentially over by the second week of November.

Winter. The number of wintering birds increased between 1960 and 1975: from 1–2 up to 5–6 typically wintered in the coastal region. The mean number found on the Coastal CBC was 5 in 1950–1972. However, statewide winter numbers fell from 15 in 1990 to 0 in 2007–2009. In the interior, 1–2 occasionally winter in the Connecticut River valley north to about Charlestown and are rarely present in late December as far north as the Lebanon–Hanover area (1956, 1960, 1966, 1967). One was at Littleton 1 Jan 1960 (R.J. Bradley) and 1 was as far north as Woodsville 13 Jan 1972 (M.L. Fuller) and 21 Feb 1981 (E.A. Emery). In the Merrimack River valley, single birds occasionally winter as far north as Concord and have been found as far north as Laconia: 1 there 29 Dec 1979 (K.C. Elkins *et al.*) and 1 Feb 1968 (H.B. Miller *et al.*). Note that most of these records are not recent.

Merlin *Falco columbarius*

Status. Regular spring and fall migrant, usually more numerous in fall. Regular but local in breeding season. First proved breeding in 1994. Occasional in winter. Numbers apparently little changed from 1870s to about 1990 after which there was a noticeable increase.

Early reports to 1950. First reported for the state by Belknap (1792) as “Pigeon Hawk, *Falco columbarius*.” Goodhue (1877a) called it “not uncommon” in the Webster area and said it might breed there but that he had never found a nest. Brewster (1925) only had 1 spring record in the Lake Umbagog region in 1871–1909 and that was

in ME, but he found it a regular and common fall transient from 30 Aug (1873) to 10 Oct (1888); he saw 4 on the latter date. He had no summer records and did not suspect local breeding. Chadbourne (1887) reports 1 seen in Great Gulf, Mt. Washington, at about 3000 feet on 8 Jul 1886, still the known elevation record for the state. Dearborn (1898) considered it “rare” in Belknap and Merrimack Counties, never having seen it himself and only having a few records for Webster (*fide* C.F. Goodhue). In the coastal region, Dearborn (1903) felt it was a “regular but rather scarce migrant” in May, August, and September.

Allen (1903) merely repeated some of the above reports and called it a “rather rare spring and fall migrant.” Marble (1909) records that “During the season of 1901 several were shot [in Crawford Notch, presumably in September]...; but in the last few years this hawk has rarely been seen,” though he did see 1 on Mt. Willey 29 Aug 1908. Goodhue (1922) said that “It is seldom that this falcon is seen in the central part of the state except when migrating and even then it is an uncommon bird, and one seldom sees more than two or three each spring and fall.” He had specimens taken in Boscawen and Webster.

White (1924b, 1937) considered it an “[u]ncommon transient” in the Concord region, seen most often “in the last half of April and the first half of October.” McGowan (1927, 1928) reported a possible nesting of this species at the unlikely locality of Cartajena Island in the Merrimack River near Manchester in May 1926. The nest was in a hole in a tree stub; excellent photographs of the nest and 3 eggs were published (McGowan 1928). Both Knight (1908) and Bent (1938) state that Merlins are known exceptionally to use tree hole nests instead of the typical stick platform. However, even though McGowan and his co-observer F. I. Martin were apparently familiar with American Kestrel, the atypical character and locality of this nest require the report to be considered improbable.

One collected by L. R. Nelson at Wolfeboro 1 May 1939 was in the NHFG headquarters in Concord until that building was destroyed by fire 21 Apr 1984 (Swanson 1984). Allan (1931) recorded 1 at the Isles of Shoals 28 Apr 1930, but did not specify in which state. Jackson (1947) states that it was a regular fall migrant at Appledore Island, ME, only a few rods from the New Hampshire state line, by the “middle of August,” his earliest report being 7 Aug 1924.

In summary, the species’s status seems to have changed little from the 1870s to 1950.

1950 to present. Population declined in the 1950s and 1960s during the impact of DDT contamination, and has recovered briskly mid-1970s to date. Breeding documented for the first time in 1994 and expanded significantly by 2009. It appears to be reclaiming what was

probably its precolonial range as reforestation proceeded since 1950. Listed as increasing by Hunt (2009b).

Spring. Earliest known spring arrivals are 1 at Walpole 5 Mar 2008 (A. Johnson) and at North Hampton 6 Mar 1996 (T. Donsker). Mean spring arrival date is 11 April, and peak migration period is the last 3 weeks of April and the first week of May; peak spring count is only 3 in a day. While regularly noted in spring, typically only a third to a quarter as many individuals are seen as in fall, the spring records being about equally divided between interior and coastal localities. Two at White and Seavey Islands 26 Apr 2001, 3 there 30 Apr 2001, 1 there 16 May 2007, and 1 there 6 Jun 2001 (all D. Hayward *et al.*). Latest known mainland spring migrant is 1 at Portsmouth 23 May 1965 (R.W. Smart, A.R. Keith *et al.*).

Summer and breeding. Regularly present at this season. One in Ossipee 24 Jun 1953 (E.E. Pratt) and 1 in the extreme northern part of the state in the Pittsburg–Clarksville area 15 Jun 1963 (F. Yates). One at Randolph 18 Jun 1991 (S.B. and M. Turner), 1 at Warner on Mt. Kearsarge 21 Jun 1991 (B. and H. Janeway). Birds were found at Errol 2 and 28 Jul 1990, 15 Jun 1991, 2–5 Jul 1992 (C.J. Martin, S.B. Turner *et al.*), culminating finally in the discovery of the state’s first documented nest in summer of 1994 at Wentworth’s Location (C. Foss *et al.*). Three pairs near Lake Umbagog in Jun and Jul 1995 (J. Carreaux, I.C. MacLeod, D. Mills *et al.*), at least 1 pair in Pittsburg in mid-Jun 1995 (R.A. Quinn, T. Young) and single birds at Errol 16 and 27 Jul 1997 (C.J. Martin) suggest possible nesting at all 3 places. Five at Wentworth’s Location and a nest at Errol 2 Aug 1997 (M. and R.W. Suomala *et al.*); the Errol nest was used successfully again at Long Pond 29 Jul 1998 (I.C. MacLeod), and possibly 3 pairs were in the Errol region in 1999 (R.A. Quinn *et al.*).

For the first time south of the White Mountains, a pair raised 5 young at Hanover 1 May through 9 Jul 2001 (W. Scott *et al.*) and a pair was suspected to have nested in Plymouth as 2 young were seen with 2 adults 18 Jul to 1 Aug 2001 (J. Williams). Nests were found again at Hanover 31 Mar 2002 (M. Krenitsky) where a pair and 2 young were seen 21 Jul 2002 (D. Crook); a pair built a nest at Plymouth 9 Apr 2002 (J. Williams) but it was later abandoned. A pair nested successfully at Hanover in 2004 (M. Kemp), and single birds were seen in July in Concord and Keene. A pair nested on “Treasure Island” in Lake Winnepesaukee in 2005; an adult and 3 young were seen there 29 Jul 2005 (C. Nims). Eight birds were reported mid-Jun to mid-Jul 2005 north of the mountains and 2 others south of there (Hampton and Plymouth). Six thought to be territorial were reported south of the White Mountains (Keene, Concord, Stratford, Alton) in May 2006 and breeding was confirmed in Alton and in Keene, the latter the first nesting ever known in southwestern New Hampshire. Breeding was confirmed in Stoddard,

Springfield, and Holderness in summer 2007; was probable in 2008 at Alton, Hanover, and New London; was confirmed in Concord, Berlin, and Sandwich in 2009; and was probable at 3 other locations that year. See MacLeod (2009a) for a summary of its regional population trends and breeding expansion in New Hampshire. It has become more tolerant of urbanized settings both in the breeding and nonbreeding seasons.

Fall. An early migrant or postbreeding wanderer was at Rye 26 Jul 2000 (A.J. Vazzano, B. Bruni). Otherwise the earliest known migrant is 1 at White and Seavey Islands 17 Aug 2000 (D. Hayward *et al.*). Highest number of migrants are found from the second week of September through the first week of October (see Ruelas raptor migration chapter). Peak single-day count is 84 at Rye 18 Sep 1999 (S.R. Mirick, P. Lacourse). Unusually large fall flights were noted in 1968 (28 birds), 1998 (30 birds), 1993 (48 birds), and 1999 (106 birds). Latest known fall interior record is 1 at Alexandria 28 Oct 1956 in the Merrimack River valley (H.C. McDade), 1 at Troy in the Connecticut River valley 22 Oct 1975 (A. McAlister), and latest coastal migrant was 1 at Hampton 25 Nov 2000 (S.R. Mirick, D.J. Abbott). Extreme dates for Star Island since 1963 have been 13 Sep 1964 (ASNH field trip) to 1 Nov 1970 (R.W. Smart *et al.*).

Winter. Few records 1950–1995, mostly at or near the coast; selected examples are 1 at Durham 2 Feb 1964 (ASNH field trip); probably the same individual at Rye Harbor 21 Dec 1968 (D.J. Abbott *et al.*) and at Hampton 4 Jan 1969 (ASNH field trip). Since 1995 has been found at the coast December through February occasionally and regularly since 2000 in numbers up to 3 birds. Statewide CBC totals rose from 0 in 1990–1994 to 7 in 2009. The known January and February winter inland records are at Lebanon (1957), Nashua (1998, 2009), Newfields (1998), Manchester (2001, 2003), Chester (2002), Concord (2004, 2005, 2010), and Surry (2009).

Gyr Falcon *Falco rusticolus*

Status. Casual and irregular winter visitor; 15 records; extreme dates from 22 October to 20 April.

Early reports to 1950. The first known state record is a dark morph female shot 10 Jan 1891 on Lyndeborough Mountain, about 12 miles from Milford. The bird was shot by George Gould of Greenfield and is now on display at the Roger Williams Park Museum, Providence, Rhode Island, where its identity was recently confirmed by R. L. Ferren. A black morph bird was shot about 20 miles south of Colebrook, somewhere near Groveton, 22 Oct 1915 (Norton 1933). A gray or black morph bird spent part of the 1921–1922 winter at the Manchester city dump feeding on feral pigeons (F.I. Martin, D.M. Foss, R. Eadie, E. Chabot, A. McGowan).

1950 to present. A white morph bird was studied at close range at Exeter 28 Mar 1955 (N.L. Hatch *et al.*), and a white morph bird was reported at Greenland 28 Mar 1966 (E.W. Phinney). There was a small late winter flight to northern New England in 1969. A total of 7 birds were found in ME, New Hampshire, and MA from 6 Feb to 7 Apr of that year (Phinney 1969). The single New Hampshire report in that period was a white morph bird well seen and photographed at Rye 26–28 Mar (L.G. and E.W. Phinney, J.E. Cavanagh, R.M. Gamester, A.C. Borrer, W.C. Chisholm). A dark morph was at Peaked Hill in Bristol 20 Apr 1975 (E.W. Phinney, A.C. Borrer *et al.*), a white morph was at Rye 5 Feb 1977 (R.J. Bradley), and a “flavistic” morph was at Ashland 13 Feb 1979 (S.A. Fogleman, P.A. Phipps). Six accepted records since 1990: white morph at Franconia 1 Mar 1993 (C.J. Martin), gray morph at Lancaster 1 Jan 2001 (R. Frechette, S. Spangenberg), Auburn 17 Dec 2005 (I.C. MacLeod), 1 at Gilford 12–19 Mar 2006 (H.C. Anderson, J. O’Shaughnessy *et al.*; photo), Dover 13 Feb 2007 (J. Owens, P. Rose), and a white morph bird at Whitefield 9 Mar 2008 (S. and M. Sprague) observed killing and carrying off a Wild Turkey! See Palfy and Suomala (2006) for a review of recent records.

Remarks. A white morph bird was reported at Errol 5 Nov 1868 (Maynard 1871), but this record was severely questioned by Allen (1903, 1909) and Forbush (1927), the latter mistakenly giving the year as 1898. The comment by Sherman (1889) that it was then “not uncommon” in Grafton County is at best a mistaken reference to the Peregrine Falcon. Thayer (1912) reported that “[a]t least twice, in early winter, we have seen what was almost certainly a Gyrfalcon flying over Dublin; but unfortunately, we have no proved record of...[its] occurrence here.” Such a report might be considered hypothetical, but by its own admission is not acceptable. Todd and Friedmann (1947) mention winter records for Milford and Exeter but provide no other details. They may have known of a record in addition to the 1955 1 from Exeter or perhaps made a mistaken reference to the 1921–1922 Manchester record. A few other published reports without sufficient supporting details have been disregarded.

Peregrine Falcon *Falco peregrinus*

Status. Irregular spring migrant and regular fall migrant in moderate numbers. Breeding population has grown sharply since 1980, primarily in the White Mountains and northward, but also as far south as Portsmouth and Manchester. Regular in moderate numbers in winter. Still considered a Threatened species in New Hampshire despite recent increases.

Early reports to 1950. The first known state reports are those of Brewster (1925) at Lake Umbagog who called it of “sparing occurrence in spring, summer and autumn,”

probably breeding nearby, though not certainly in New Hampshire. His records for New Hampshire were single birds on 6 and 9 Oct 1888, 26 Sep 1889, 19 and 25 Sep 1894, and 26–27 Aug 1896. He also points out that the records of Golden Eagles attributed to him by Maynard (1871) for Eagle Cliff above Profile Lake in Franconia Notch in the summers of 1867, 1868, and 1870 were actually Peregrine Falcons, and he strongly suggests that the report by Baird, Brewer, and Ridgway (1874, Vol. 3) of Golden Eagles nesting in that same eyrie for “quite a number of years” at least until 1855 was probably an error for Peregrine Falcons as well.

Dearborn (1898) recorded 1 shot in Alexandria in mid-May 1896 and had other reports suggesting that a pair was nesting near Newfound Lake where 1 was “seen on several occasions during the summer of 1902” as also reported by Howe (1901–1903). Dearborn (1903) called it “not rare in the wilder portions” of the state, but he had no specific records for the coastal region. Allen (1903) considered it “An uncommon local summer resident,” noting that “a pair has bred for several years” at Humphrey’s Ledge at Intervale, that 1 or 2 were “usually” found at Mt. Monadnock (*fide* G.H. Thayer), and that it was a regular migrant in the coastal region in March, April, September, and October (*fide* W.E. Cram).

Wright (1911) had records at Jefferson in the “first week of August, 1907” (*fide* N.C. Brown) and for both Mt. Clinton and Mt. Franklin on 15 Sep 1910 (R.M. Marble *et al.*). Lord (1918) noted it as present “[y]early at Holt’s Ledge” in Lyme 1912–1917. Goodhue (1922) called it 1 of “the rarest hawks found in the state” but said that “these birds have nested for years on the precipitous ledges along the sides of the valley through which flows Baker River in the town of Rumney.” Birds from this area could have been those observed near Newfound Lake by Dearborn (1898) and Howe (1901–1903). Forbush (1927) called it a “[r]ather rare migrant and uncommon, local summer resident.” Allan (1931) reported 1 at the Isles of Shoals 6 Oct 1929 without indicating in which state. White (1924b, 1937) had only 1 record for the Concord region, a specimen “taken at Penacook, October 10, 1879...[then] in the Goodhue collection.” Summer records near the White Mountains were 3 seen at Lake of the Clouds, Mt. Washington, 18 Jun 1944 (D.E. Wade), 1 at Northumberland 30 Jun 1949 (T. Richards) and possibly the same bird at Groveton 20 Jul 1949 (T. Richards). An unusual inland winter record is 1 at Goffstown 22 Feb 1942 (K. Tousey), and an unusual late spring report is 3 at Eaton 29 May 1949 (R.P. Fox).

In summary, the Peregrine Falcon was a regular but local nester until about 1930, principally from the White Mountains northward. The total state breeding population may have never exceeded 10–12 pairs in any given year, though J. Hickey identified 18 eyries in the state



Andrea Robbins 1983

used between the late 1800s and 1930 (Foss 1994). The latest known documented nesting record at Rumney was in 1931 (Proctor 1947); it probably nested at a few favored or less disturbed spots until the late 1930s or even the 1940s. While never common as a seasonal migrant, it was regular in fall in moderate numbers, especially at the coast, from 1900 to about 1950.

1950 to present. Sharp decline in the number of migrants and elimination of all breeding pairs in 1950–1975. Major recovery since, partly due to reintroduction of captive-reared birds and natural population expansion from successful breeding after DDT was banned. Now a local breeder and regular and moderately common migrant, particularly in fall; winter numbers have increased noticeably. Breeding population listed as increasing by Hunt (2009b).

Spring. Recorded only 19 times in spring in 1950–1972 and not at all in 8 of those years, the great majority of reports being in the last 3 weeks of April. Highest count in a day 1950–1972 was only 2. In contrast, by spring 1991 birds were arriving at White Mountain nesting cliffs by the first half of February into early March; 2 at Holt’s Ledge in Lyme 10 Feb 1999 (C.J. Martin). The latest northbound migrants are suspected into mid-May but cannot be distinguished with certainty from nonbreeding birds that can occur almost anywhere. Such a possible late migrant was 1 at Seabrook 18 May 1991 (S.R. Mirick *et al.*).

Summer and breeding. The effects of DDT contamination which caused eggshell thinning effectively extirpated this species in the eastern United States by the early 1960s (Bollengier 1979); DDT was finally banned in 1972. Presumed nonbreeding birds were found in only 4 years 1950–1965 as follows: Madison in Jul 1950, 2 sightings of possibly the same bird near Pittsburg in 1957, 2 sightings of possibly the same bird in New Hampton and Sanbornton in Jul 1957, 1 at Jackson in Jun 1965, and 1 at Nashua in Jul 1965. Birds thought to be postbreeding wanderers have been 1 at Epsom 10 Aug 1975 (B.D. Richards *et al.*), 2 at Wolfeboro 13 Aug 1965 (R.P. Fox), an adult with a juvenile at Mt. Whiteface 12 Aug 1970 (V.W. Howe), and 1 at White and Seavey Islands 28 Jul 2004 (M. Barney *et al.*).

Beginning in 1976 and ending in 1986, more than 75 captive-reared birds were introduced into the wild in the White Mountain National Forest through the joint cooperation of the USFWS, White Mountain National Forest and NHFG personnel, and The Peregrine Fund. Thirteen previous nesting sites were carefully checked in 1964 but no birds were found at any of them (Hickey 1969). No nest sites were occupied through 1980 (WAP 2005). In 1981–1986, breeding was confirmed at 4 sites and considered probable at 2 others, all in the White Mountain area (Foss 1994). The following breeding data for selected

years were compiled by ASNH personnel under contract with NHFG:

Year	#Occupied Territories	#Territorial Pairs	#Successful Nests	#Young Fledged
1981	1	1	1	2
1985	4	4	2	5
1990	7	7	4	11
1995	11	11	8	15
2000	11	10	10	25
2001	13	12	10	22
2002	14	14	9	27
2003	14	14	10	22
2004	15	13	8	15
2005	13	12	8	24
2006	17	14	6	14
2007	18	18	12	24
2008	18	17	13	27
2009	17	15	12	29
2010	19	16	13	35

An excellent map of breeding distribution is in WAP (2005). Due to heavy rains during the peak of the incubation period productivity was lower in 2006 but recovered later.

Fall. Earliest known probable southbound migrant is 1 at White and Seavey Islands 16 Aug 2001 (D. Hayward); single birds there each of 31 Jul and 3 Aug 2002 (D. Hayward *et al.*) and 1 at Hampton 2 Aug 2009 (L. Medlock *et al.*) were more likely postbreeding wanderers. Earliest inland southbound migrants could occur as early as the first week of August but cannot be distinguished from local birds dispersing from breeding areas in the White Mountains. Highest numbers of migrants are found from the last week of September through the third week of October with a sharp peak in the first and second weeks of October (see Ruelas raptor migration chapter). Excluding the Isles of Shoals, a total of 73 birds were reported in fall in 1950–1972, a mean of 3.2 per year. In 1972–1980 this mean increased to almost 5 per year as the effects of DDT contamination began to decline, and by the 1990s this mean exceeded 15 per year. Fall migrants are by far most often seen along the coast or in the Merrimack River valley at such locations as Pack Monadnock. Peak daily counts up to 6 have been recorded occasionally at inland hawkwatch sites; peak one-day coastal count is 31 at Rye 8 Oct 1995 (S.R. Mirick, P. Lacourse). Latest records for presumed migrants are 1 in the interior at Concord 17 Nov 1969 (H.B. Miller) and 1 at Durham on the coast 24 Nov 1963 (C.E. Smith).

It is regular at the Isles of Shoals and over the nearby ocean in fall. A high count of 5 was seen passing Smutynose Island, ME, only a few rods from the New Hampshire border, 9 Oct 1954 (Libby 1955). In 1968–1980, ASNH field trips regularly found 1–2 on Star Island between extreme dates of 4 October and 1 November.

Winter. Coastal region reports were scarce 1950–1975 but include 1 at Exeter 8 Jan 1954 (G.P. Baker), probably the same individual at Portsmouth 1 Jan and 14 Feb 1965 (L.G. and E.W. Phinney, R.W. Smart), and 1 at the coast 21 Dec 1969 (A.C. Borrer). Two were far north in Cambridge 21 Jan 1996 (J. Brown). Presumably the same individual bird wintered in downtown Manchester every season from 1987–1988 through 1993–1994 (Foss 1994). Wintering numbers reached 7 in the coastal region in January and February 1997 and 2000; 7 were found in

the interior in Feb 1998, 4 were found inland Jan–Feb 2002, 5 in Jan–Feb 2003, 4 in Jan–Feb 2005, 3 inland of a total of 8 in Jan 2006; 2 inland out of a total of 5 Jan–Feb 2007, 6 out of 8 in 2008, and 3 out of 6 in 2009.

Taxonomic Note. A significant part of the recent increase in both spring and fall migrants is due to the increase in the population of the migrant form *F. p. tundrius* rather than the increase in local nesting birds.

ORDER GRUIFORMES

FAMILY RALLIDAE

Yellow Rail *Coturnicops noveboracensis*

Status. Casual transient, recorded only 5 times in fall, though it probably passes through annually in both spring and fall on migration to and from known breeding colonies in New Brunswick and eastern Quebec.

Records. The first known state report is that of Dearborn (1903): “[T]his rail has been observed...at Hampton...about the first of September. The only specimen I have been able to find is in the collection of Mr. Shaw at Hampton.” Though probably taken in New Hampshire, this cannot now be confirmed as the specimen is lost. One was collected either in early Sep 1913 or in Aug 1914 at Hampton Beach by Clarence Getchell (AMNH #129279). Griscom (1953) reported 1 collected at Wolfeboro 2 Oct 1952 (*fide* R.G. Carpenter 2nd) which was in the mounted collection at the NHFG headquarters, Concord, in 1957 (Silver 1957), but which was lost when the building burned down 21 Apr 1984 (Swanson 1984). One was shot at Wilmot 21 Oct 1961 (S.C. Hayward), carefully identified but not preserved. Two were well seen on a lawn at the edge of a marsh at North Hampton 4 Sep 1963 (Markot) and 1 was reported at Nottingham 23 Sep 1985 (M.J. Murray).

Remarks. Palmer (1949) had no certain spring records for ME but had 1 breeding report which he doubted; Gibbs *et al.* (1991) reported calling birds that were possibly breeding at 4 sites in northeastern ME in May and Jun 1990; now considered rare (ME-BRC website). Of interest is an immature male collected at Windsor, VT, 20 Oct 1913 (Marble 1923), less than 2 miles from New Hampshire in the Connecticut River valley; there are now 4 accepted records for VT (C.C. Rimmer pers. comm.). All New Hampshire reports are from the coast, central Lakes Region, or the Merrimack River valley. This species is a later migrant than generally realized; Griscom and Snyder (1955) give its fall migration period in eastern MA from mid-October to mid-November, and Griscom

(1936) reported the peak migration at Marshfield, MA, as 10 Nov 1935 (*fide* J.A. Hagar).

Black Rail *Laterallus jamaicensis*

Status. Vagrant from the south. One heard by about 100 and seen by several observers 19–26 May 2003 at a freshwater wetland in Greenland (M. Tarr *et mult.*) as reported by Tarr (2003). No accepted records for ME (ME-BRC website), 1 hypothetical record for VT (C.C. Rimmer pers. comm.), and at least 10 records for MA (Veit and Petersen 1993, BO database 2010).

Clapper Rail *Rallus longirostris*

Status. Casual visitor to the coastal region.

Early reports to 1950. Dearborn (1903) provides the first state record, a bird “brought to Portsmouth some years since by a southwest gale and dropped on the flats near the city, where it was knocked over by a clam digger.” The specimen was added to the collection of what is now UNH and a mount that is almost certainly the same bird is still there (UNH #490). One was at Rye Harbor about 9 Sep 1933 (Shelley 1934e).

1950 to present. Other than winter stragglers in December and January, reports cluster from early May to early July and in October. One was at Great Bay 26 Dec 1953 (R.E. deLancy). One was at Hampton 4 Jun 1961 (ASNH field trip) and 2 were there 8 Jun 1961 (R.W. Smart, V.H. Hebert). One was collected at Seabrook 10 May 1965 (A.C. Borrer *et al.*; UNH #4086A). One was seen at Star Island 6 Oct 1968 (F. Steele). A moribund bird at Rye 24 Jan 1970 (K.C. Elkins *et al.*) was collected (St. Anselm’s College #135). One at Hampton 23 May 1972 (L.G. Phinney) was seen and heard by others subsequently. One was present at Rye 29 Jun 1982 (E.W. Phinney). Probably at least 5 were found at Hampton 25–26 Jun 2005 (S.R. Mirick *et al.*), single birds were found there 1 and 8 Jul 2005 (B. Griffith, R.W. and M. Suomala), 1 was there 19–25 May 2007 (J. O’Shaughnessy *et mult.*), 1 was found at

Seabrook 2 Oct 2009 (P.D. Hunt, J. Lambert, B. Griffith), and up to 2 were at Hampton at least 21–25 May 2011 (S.R. Mirick *et al.*).

King Rail *Rallus elegans*

Status. Very rare and local spring migrant, possible summer resident; casual in fall. Not yet proved to breed.

Early reports to 1950. The first state record is a female collected at Hampton 7 Dec 1924 by Peter B. Olney as reported in a letter from J. D. Smith to Forbush (1925); the specimen is now #01-676 in the mounted collection at MOS. One bird found in Plaistow from late Jul at least to 7 Aug 1949 (L. Barrett), and 1 at Rye 7 Aug 1949 (V.H. Hebert).

1950 to present. A total of 25 birds were reported in 13 of the 18 years 1959–1976; 18 birds were found in the coastal region including locations as far inland as Exeter and Durham. Extreme spring dates for this area are from 25 Apr 1965 (A.C. Borrer) at Durham to 12 and 18–19 Jun 2005 (W. Fritz, D.B. Donsker, S.R. Mirick *et al.*) at Hampton, the majority of reports being calling birds in mid-May. Very few records 1977 to date, 1 being at Newington on Great Bay 8 Jun 2002 (S.R. Mirick, J. Lawrence). The only fall reports for the coastal region are 1 at Durham 16 Sep 1964 (A.C. Borrer) and 1 at Hampton 28 Sep 1969 (R.W. Smart). There are no reports between June and September at the coast.

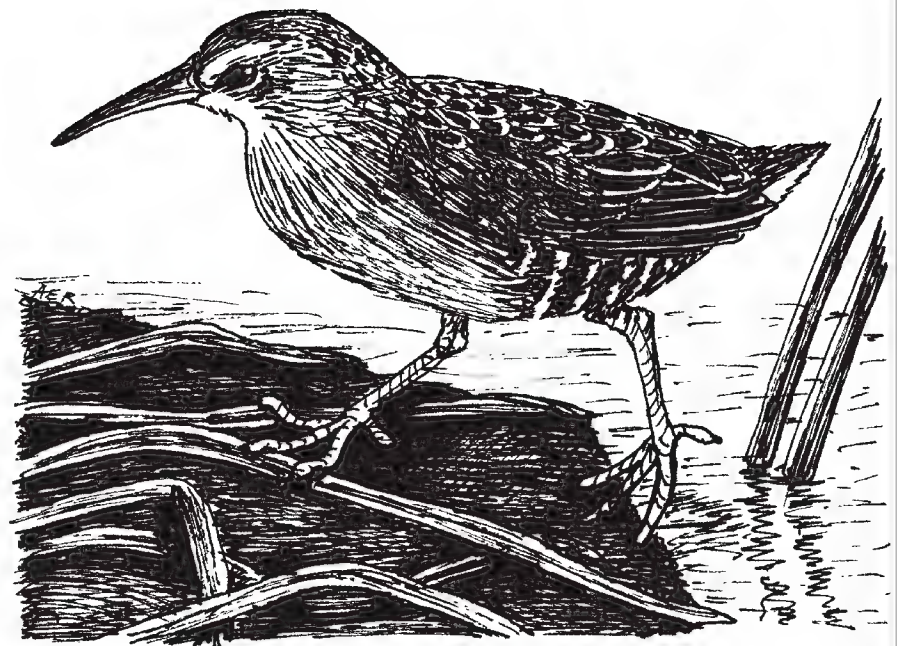
In the interior, there is 1 record for the Merrimack River valley at Danbury 14 May 1959 (R.W. Smart *et al.*), and only 2 reports from the central Lakes Region: 1 at New Durham 20 May 1970 (L.G. and E.W. Phinney) and 1 at Moultonborough 27 May 1970 (R.W. Smart). There are 3 widely scattered reports from the Connecticut River watershed: 1 at Marlborough 19 Jul 1961 (I. deForest), the only known report for that month; 1 seen at Charlestown 4 and 11 Sep 1969 (W.W. Kidder). By far the northernmost record is 1 at Stewartstown 8 Sep 1966 (*fide* R.W. Suomala).

Masterson (2002b) cites 35 records “since 1934 involving a total of 43 birds in 21 different years,” with 28 of those 35 reports 1961–1971. Statewide, he reports 9 records in April, 13 in May, 3 in June, 1 in July, 3 in August, and 6 in September.

Virginia Rail *Rallus limicola*

Status. Regular but uncommon spring and fall migrant and summer resident, much scarcer and more local from the White Mountains northward. Rare in winter.

Early reports to 1950. The first state record appears to be 1 taken at Marlow 1 Oct 1881 by G. G. Dickey [specimen in Acworth–Silsby Free Public Library, Acworth in 1972; Keith (1974)]. A nest with 8 eggs was found at Hampton



in the 13–28 May period 1887 (Shaw 1887). One was collected by Brewster at Cambridge, Lake Umbagog, 21 Sep 1888 (Brewster 1924; MCZ #292758); his only other 2 records for the lake in 1871–1909 were in ME. Dearborn (1898) considered it very rare in Belknap and Merrimack Counties, only listing it at all on the authority of C. F. Goodhue. Dearborn (1903) called it a “regular visitant” in the marshes of the coastal region (*fide* S.A. Shaw). Allen (1903) called it a “local summer resident...[but] perhaps not so rare as the few records might seem to show,” listing it in summer from Hampton Falls (*fide* W.E. Cram), Hollis (*fide* W.H. Fox), and Lancaster (*fide* F.B. Spaulding), in the latter case a nest and 10 eggs being found.

Wright (1911) called it a “rare summer resident, and possibly a rare fall migrant” in the Jefferson region, having 2 sight records at Cherry Pond in 1908. Thayer (1912) found it near Dublin for the first time in the summer of 1912. White (1924b, 1937) called it an “uncommon transient” in the Concord region, principally in fall, having records for 13 Oct 1921 and 12 Sep 1936. He noted that it was “shot more or less frequently late in summer near the Merrimack River” (*fide* F.S. Moulton). L. R. Nelson collected a pair at Rye Beach 19 Oct 1937 and a downy young at Winchester 9 Jul 1939; these specimens were lost in the fire at the NHFG headquarters in Concord 21 Apr 1984 (Swanson 1984). The first local record at Andover was found 29 May 1939 (K.C. Elkins). One that flew into a church steeple in Exeter 12 Nov 1939 (T.W. Lamont II) is now MCZ specimen #330441. One was found at Second Connecticut Lake 2 Aug 1949 (C.H. Rogers). Also, 1940–1949 reports to RNEB in breeding season and summer included reports from Lyme, Andover, Monroe, Exeter, Nashua, Canterbury, Alton, Jefferson, and New Durham.

In summary, this species has probably been a regular but local migrant and summer resident for hundreds of years and throughout the historical period and may have ben-

effitted from land clearing for agriculture and creation of wet meadows up to the 1880s. Its range is thought to have extended northward since 1900 but the species is thought to have been less common by 1950 due to filling and disturbance of breeding marshes, especially on the coast and in the Lakes Region and along the 2 major interior river valleys.

1950 to present. A modest increase because the number of Beaver ponds has risen during this period, providing more habitat.

Spring. Extreme early known arrival date is 1 seen 31 Mar 1998 at Canterbury (R.A. Quinn). Mean arrival date is 18 April, and peak migration period is the last week of April and the first 2 weeks of May. Peak spring count is 5 at Jefferson 21 Apr 2002 (D. Govatski, C. Bretton); 11 birds reported from 7 localities in spring 2006 and 18 reported from 14 localities in spring 2007, including the first known spring record from the Isles of Shoals: 1 at White and Seavey Islands 22 May 2007 (D. and M. Hayward). Late spring migrants cannot be distinguished from summer residents.

Summer and breeding. To be expected in appropriate habitat at lower elevations nearly statewide, especially along the 2 major river valleys and in the central lakes and coastal regions. In 1950–1980, it has been proved breeding by the observation of young in Andover (1953), Pittsburg (1954), Concord (1962, 1963, 1974), Kensington (1962, 1973), Jefferson (1953, 1965, 1980), Rye (1966), Hopkinton (1968), Canterbury (1973), Sandwich (1975), and Milford (1972). It is also presumed to have at least attempted to breed at over 30 other localities where adults have been found in June and July. Northernmost known locality is Scott's Bog, only about 2 miles from the Quebec border: 3 adults seen 9 Jul 1953 (T. Richards). Highest count in a day for a single locality is 9 at Concord 15 Jul 1969 (R.W. Smart, H.C. Anderson); in Jun and Jul 2005 R. A. Quinn and R. A. Woodward found 244 on a survey of the Concord area. In the 1981–1986 *Atlas of Breeding Birds* project, 13 breeding sites were considered confirmed or probable, but the vast majority of reports were from the southeast quadrant of the state (Foss 1994). Twenty-one birds were reported 2 Jun to 26 Jul 2004 from 10 different localities as far north as Pittsburg (v.o.). Forty-three birds were reported statewide including 24 in the Concord area early Jun through Jul 2005 (v.o.), second only to 46 reported in 1999.

Fall. Earliest migrants cannot be distinguished with certainty but probably occur in the last 2 weeks of August. Peak migration period is thought to be the month of September, but the evidence for this is slender. It was only reported 8 times in October 1950–1980 though is probably present regularly into the first week of that month. Latest fall reports of very probable migrants (other than

the Nov 1939 record) are 2 at Exeter 7 Nov 1970 (D.W. Finch), 1 at Lebanon 13 Nov 1994 (P.D. Hunt), and 1 found freshly dead far north at Cambridge 27 Nov 1994 (J. Hansen).

Winter. Eight reports from coastal CBCs: 3 on 28 Dec 1952, 1 on 23 Dec 1972, 7 on 15 Dec 1973, 4 on 14 Dec 1974, 1 on 18 Dec 1976, 1 on 15 Dec 1979, 2 on 17 Dec 1983, and 3 on 18 Dec 1993. Other reports are 1 at Hampton 1 Jan 1962 (V.H. Hebert), 1 at Lee 19 Dec 1973 (O. Earle), 1 in Salem 7 Feb 1982 (K.E. Folsom), and 1 at Hampton 21 Jan 2002 (D.J. Abbott).

Sora Porzana carolina

Status. Regular but uncommon migrant in spring and fall. Uncommon summer resident and breeder, scarcer and more local from the White Mountains northward. Very rare in early winter. A species of Special Concern in New Hampshire.

Early reports to 1950. This was certainly the species Belknap (1792) meant by “Peep, *Rallus carolinus*.” Brewster (1924) called it a “[c]ommon transient visitor in autumn” at Lake Umbagog in 1871–1909, his extreme dates being 4 September to 30 October, though these dates may not apply to New Hampshire localities. He also noted that Soras “used to occur most plentifully about the middle of September,” and that several were found in Cambridge 24 Sep 1889. Dearborn (1903) had no evidence that it nested in the coastal region but called it “an abundant visitor to the marshes all along the coast in September, and sometimes obtained at Great Bay.” He also noted 1 killed in spring at Hampton that had only 1 wing; the wound was fully healed, implying that it had successfully overwintered, the only known such record.

Allen (1903) called it “An uncommon and local summer resident,” having found it in summer at North Conway and at Intervale 13 Jul 1897 and 26 Aug 1898. He also reported it from Hampton Falls in summer (*fide* W.E. Cram) and said it was “not uncommon in fall at Rye Beach” (*fide* W. Brewster). Wright (1911) found it “[a] rare summer resident, and a fall migrant” in the Jefferson region, having records of probable migrants 21 Aug 1903, 28 Aug 1904, and 18 Sep 1908, and 2 juveniles at Cherry Pond 29 Jun 1910.

Thayer (1912) noted that it was seen occasionally in the Peterborough marshes in breeding season. White (1924b, 1937) called it “fairly common” near Concord about 1900 and mentioned that young had been seen there in July. Jackson (1947) provides the only known reports for the Isles of Shoals: 1 on 14 Aug 1936 at Appledore, ME, and 1 “the last of August, 1929,” the state not noted; both records illustrate the time of coastal migration. In 1949 it was reported to RNEB in Jun and Jul from Errol, Dummer, Barnstead, Northumberland, and Haverhill.

The Sora appears to have been a regular though local breeder and a common migrant, especially in fall, even after the period of market hunting in the 1870s and continued hunting pressure into the early 1900s. It also appears to have declined somewhat since 1900 both as a migrant and breeder due to filling and disturbance of marshes, particularly in the coastal region.

1950 to present. Population trend probably slightly lower; listed as with a declining population trend (Hunt 2009b).

Spring. Earliest known arrival is 1 at Great Bay in Greenland 12 Apr 1967 (L.G. and E.W. Phinney), the next earliest not being until 1 on 20 Apr in 1997 at Exeter and in 2002 at Newmarket (both S.R. Mirick). Mean arrival date 1959–2009 was 3 May, and peak migration period is the last 3 weeks of May. Late spring migrants cannot be distinguished from summering birds.

Summer and breeding. A sporadic and very local summer resident and breeder, especially from the White Mountains northward; possibly overlooked, though it is often very vocal in May and June. Since 1950 it has been recorded during breeding season in 23 towns widely scattered across the state, though seldom from the same area from year to year, and probably not just because coverage has been inconsistent. Young were observed at Londonderry in 1965 and at Nottingham in 1985. In the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or thought probable in only 7 priority atlas blocks, all in the southeastern quadrant of the state (Foss 1994).

Fall. As suggested by some of the early reports above, the first migrants are to be expected in the coastal region by the third week of August, and peak migration period is the last 3 weeks of September and the first week of October. Peak count is 15 at Ballard Marsh in Derry 10 Oct 1989 (S. Krzys). In 1950–2009, there were only 6 reports in the last 2 weeks of October and 3 reports in November: 5 at Nashua 3 Nov 1963 (N. diGiovanni), 1 at New Durham 4 Nov 1966 (R. Fontayn); and 1 at Rye 7 Nov 2009 (L. Kras *et al.*).

Winter. Four records from coastal CBCs: 2 on 15 Dec 1973, 1 on 14 Dec 1974, 1 on 17 Dec 1983, and 1 on 28 Dec 1999. Other reports are 1 at Dunbarton 2–16 Dec 1961 (J.B. Grant *et al.*); 1 at Seabrook 30 Dec 1961 (A.C. Borrer *et al.*), and 1 at Concord 13 Jan 1987 (K.E. Dymment, D. Stavros).

Purple Gallinule *Porphyrio martinicus*

Status. Rare and casual visitor from the south, primarily in spring and fall; once in January.

Early reports to 1950. First recorded by Dearborn (1903): a “Purple Gallinule was killed at Rye some years since and

mounted by Mr. Joseph Turner of Portsmouth. Another specimen has been taken at Willand Pond, Dover, according to Mr. George F. Wentworth of that city.” Both of these specimens are now lost. One was taken alive about 1 May 1925 at Meriden and given by Mrs. Elsie E. Wheeler to the Franklin Park Zoo Aviary in MA, where it remained the rest of its days, apparently not preserved thereafter.

1950 to present. A bird was captured at the coast in the spring of 1973; it arrived on a fishing boat that had just arrived from Louisiana but its subsequent fate was not recorded (*fide* A.C. Borrer). One found near Lee 25 Jan 1987 (A.C. Borrer, S. Welch) ultimately died and was deposited in the UNH collection. A slightly injured juvenile bird discovered by the roadside near Hanover 9 Nov 1998 was taken to the VT Institute of Natural Science Raptor Center for rehabilitation; about a month later it was flown to Florida and released (*VT Birds* newsletter 1 [1]: 3). One was at Exeter 13–16 Oct 2000 (J. Mittermeier *et al.*) and 1 was found dead at the Seabrook Power Station 7 Oct 2010 (B. Coes; photo). Over 20 records for ME (ME-BRC website, P.D. Vickery pers. comm.), and over 50 for MA (Veit and Petersen 1993, BO database 2010).

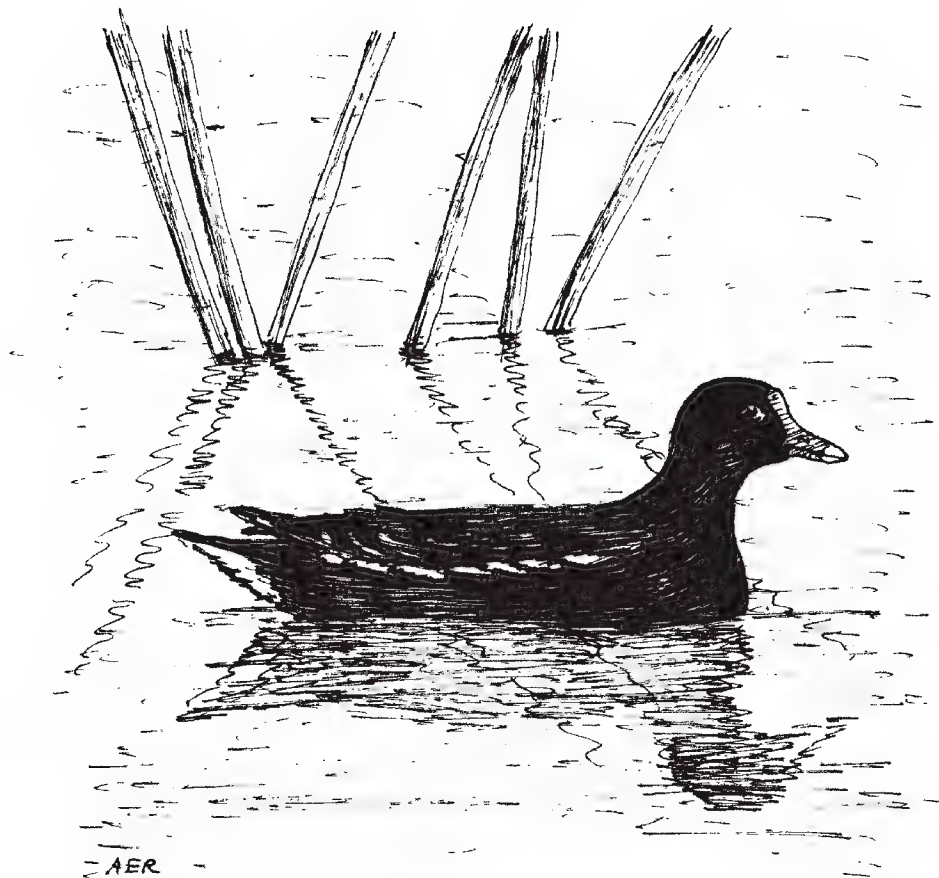
Common Gallinule *Gallinula galeata*

Status. Spring and fall transient in small numbers, increasingly noted 1960–1985, less often since. A rare and local summer resident, occasionally breeding. A species of Special Concern in New Hampshire.

Early reports to 1950. The first state record is given by Dearborn (1903): “Mr. George Wentworth of Rollinsford has an immature specimen of this species which he killed by a brook near his house some years since.” Present location of this specimen is unknown. White (1924b, 1937) had only 1 record for the Concord region, a juvenile taken on a date now lost at Fort Eddy by N. E. Martin. Forbush (1925) called it “[a] very rare migrant and probably summer resident,” perhaps suggesting some increase or recognition that it was being overlooked. In any case, it was clearly casual or occasional at best in 1900 but appears to have increased to irregular status by the late 1940s (WAP 2005).

1950 to present. An increase in reports and of numbers present, especially since 1960, but fewer reports since 1985. Population trend listed as decreasing by Hunt (2012).

Spring. Extreme early arrival date is 1 at Rye 18 Apr 1976 (T. Richards) and mean arrival date 1960–2009 was 3 May. As many as 5 birds have been reported in a spring season (1971, 1975); the vast majority of records are from the coastal region, with only a few from the Merrimack River valley and the central Lakes Region. Extreme late spring date in the coastal region is 1 at Newington 25 Jun



2002 (S.R. Mirick). One was inland at Concord 25 Apr to 1 May 2007 (E.A. Masterson *et al.*), 1 as far north as Errol 4 May 1996 (C.J. Martin, M. and R.W. Suomala), and 1 at Marlow 18 May 1984 (H.M. Cadot). It is seldom reported after May, by which time migration is over.

Summer and breeding. The first proven New Hampshire breeding records were 2 adults with at least 6 young found at Portsmouth in Jul 1960 (T. Richards *et al.*) and 2 adults found with 3 young at Concord in Jul 1962 (T. Richards *et al.*). In addition, a bird was found at Cherry Pond, Jefferson, in late May 1962 (J.P. Stevens, M. Underhill) and what is presumed to be the same individual was still there the following 19 Aug (H.C. McDade *et al.*), leading Richards (1965a) to hypothesize that it “may well have nested.” Other localities from which it has been reported during breeding season are Barrington, Concord, Rochester, Rye, Exeter, Moultonborough, and Portsmouth. Reports in 1962 from Cherry Ponds, Jefferson; and from Pontook Reservoir, Dummer; were the first known breeding season records for the White Mountain region and for central Coos County respectively. In 1981–1986, only 5 confirmed and probable breeding sites were found, all in the southeast part of the state (Foss 1994). One bird was at Exeter 1 and 7 Aug 1972 (D.J. Abbott, D.W. Finch), but it may have been a postbreeding wanderer, not having been there earlier. One was far north at Errol 26 Aug 1994 (R.C. Martin, P. Allen). One at Jefferson 26 May was still there 12 Jun 1997 (R.A. Quinn); 1 at Durham 8 Jul 2006 (G.W. Gavutis, Jr.) and 1 at Newington on Great Bay on each of 17 Jun 1999 (S.R. Mirick, K. O’Brien) and 25 Jun 2002 (S.R. Mirick) may have bred. This retiring species may be a more frequent summer resident than the available published reports indicate. An excellent distribution map is in WAP (2005).

Fall and early winter. Most often noted as a late fall migrant but recorded only about half as often at that season as in spring, extreme dates being 11 Sep 1960 (K.C. Elkins *et al.*) at Portsmouth to 9 Dec 1999 (S.R. Mirick, J.W. Berry) at Exeter. The majority of fall reports are clustered in the last week of September and the first week of October, primarily in the coastal region. The latest fall report for the Connecticut River valley is 1 at Charlestown 19 Nov 1972 (*vide* W.W. Kidder) and for the coastal region is 1 at Rye 3 and 4 Dec 1966 (L.G. Phinney *et al.*).

American Coot *Fulica americana*

Status. Irregular spring migrant in small numbers. Regular and uncommon to occasionally common fall migrant, a few usually lingering into December and occasionally wintering. Unconfirmed in July or August and unknown to breed.

Early reports to 1950. The first state record is 1 taken at Rye 26 Sep 1881 by W. Brewster (BSNH #15454). The next are those found at Cambridge on Lake Umbagog (Brewster 1924): 1 collected 15 Sep 1898 (J.C. Melvin; MCZ #291334) and another seen 24 Sep 1898. These were Brewster’s only New Hampshire records in 1871–1909; he also had 2 for ME. Dearborn (1898) called it “not rare” in fall in Belknap and Merrimack Counties, but he had no spring records. In the coastal region, Dearborn (1903) said it was most likely to be seen “between the last of August and the middle of October.” Allen (1903) considered it “[a] rather rare autumn migrant...occurring in the Connecticut valley and the [central] Lakes Region.”

Wright (1911) had only 2 records for the Jefferson region at Cherry Pond: 24 Sep 1907 and 22 Sep 1908. White (1924b) called it “rare”, having only 3 records for the Concord area and 1 for Webster. But later (1937) he called it “uncommon” at Concord, having records for 3 more birds in October, including 1 collected 10 Oct 1935 (MCZ #291334), and 1 seen 27 Apr 1928 (G.P. Milne). The highest known pre-1950 count known is 20 at Claremont on 22 Sept 1937 (W.P. Smith). Two were at Hampton 13 Sept 1941 (H. Coolidge). Two were at Rye Beach 11 Apr 1947, 4 were at Jefferson Lake 6 Nov 1948, 3 were at Lake Winnisquam 12 Nov 1948, 2 were at Rye 5 Apr 1949, and the earliest known fall record is of a juvenile bird at Wentworth’s Location 8 Sep 1949 (all T. Richards reports in RNEB). Two were found at Hinsdale 2 Oct 1949 (R.H. MacArthur), and 1–5 birds were found at Wakefield, Rye, and Taylor River Refuge 28–29 Oct 1949 (T. Richards reports in RNEB). The first known late fall records were 9 at Kingston 9 Nov 1949 and 1 at Lake Winnisquam 13 Dec 1949 (both T. Richards). The only known report for the Isles of Shoals is that of an injured bird there 2 Aug 1929 (Allan 1931, Jackson 1947), the exact state not reported.

Bagg and Eliot (1937) noted that “Mr. L. O. Shelley of East Westmoreland [wrote March 3, 1932] that at least until 1923 the ‘Mud-Hen’ was frequently reported there in spring, and he strongly suspects that it breeds ‘as birds apparently with young have been seen about two of the islands’ in the River, and also at Spofford Lake.” This report is suspect, being the unique one suggesting that the coot was ever regular in spring in the Connecticut River valley in the 1920s and since no other observers have ever suspected or corroborated breeding; possibly an error for Common Moorhen.

In summary, while this species may have been much more common at some time prior to the 1870s as Palmer (1949) has suggested for ME, Goodhue (1922) did not even list it, and Brewster (1924) was surprised it was so rare at Lake Umbagog. Richards’ (1954) explanation could be the answer: it “may have been fairly common before heavy shooting, especially further south, reduced the number of migrants occurring here.” It appears to have increased from about 1900 to the 1940s, rather suddenly appearing in the records fairly frequently in 1937–1949.

1950 to present. Continued increase in reports as the numbers of observers have risen; irregularly present in winter.

Spring. A total of at least 40 birds were recorded in 14 years in 1950–1980 and reported at a slightly higher pace since. It is an early migrant; extreme early arrival of birds thought not to have wintered is 1 at Hinsdale 9 Mar 2007 (E.A. Masterson), next earliest being 1 at Laconia that joined a wintering bird 20 Mar 1971 (H.C. Anderson). Over half the spring reports are in the second and third weeks of April, split about evenly between inland and coastal localities. Latest known spring records are 1 at Concord 1 Jun 1985 (V.H. Hebert) and 1 at Exeter 11 Jun 2007 (R. Aaronian).

Fall. Extreme early arrival, other than the 1949 record, is 2 at Rye 9 Sep 1957 (ASNH field trip), though September records are scarce and typical arrival is not until the first or second week of October. Peak migration period is the last 2 weeks of October and the first 3 weeks of November, numbers tending to collect at favorite localities by the end of this period. This accounts for the peak counts of 190 at Kingston 23 Nov 1995 (S.R. Mirick), 151 at Kingston 31 Oct 2007 (S.R. Mirick), 96 at Rye 25 Nov 1994 (A. and B. Delorey), and at least 10 other counts of 50 or more. One hundred sixteen were at Kingston as late as 7 Dec 2006 (S.R. Mirick) after the large fall flight that year. Otherwise, both at the coast and along the 2 major interior river valleys, counts over 20 are unusual and are restricted to a handful of sites. The latest known fall record in the Connecticut River valley is 1 at Chesterfield 4 Dec 1960 (T. Richards). Migration is usually over by the second week of December.

Winter. Occasional in this season in areas of open water, both in the coastal region and inland. The first known successful wintering record was 1 found at Laconia 2 Jan 1954 (CBC) that survived until spring. One was at Rye 31 Dec 1956 (CBC); and 7 were found there 28 Dec 1957 (CBC) but only 1 remained 5 Jan 1958 (B. Keenan). One wintered successfully at Laconia from 7 Jan 1962 (K.C. Elkins *et al.*) to spring. In the winter of 1969–1970, 4 birds wintered at Laconia, and 1 or more remained at least into mid- to late January in subsequent winters through 1981 with a high count of 16 on 29 Dec 1979 (Laconia CBC) of which 5 were still at Laconia 20 Jan 1980 (K.C. Elkins). To date, this is the only place where birds have wintered repeatedly. A bird found for the first time at Portsmouth 3 Mar 1963 (A.C. Borrer *et al.*) is suspected to have been present all winter rather than being an early migrant. One was inland at Hinsdale 4 Feb 2007 (E.A. Masterson) and another at Nashua 21 Feb 1998 (R. Andrews *et al.*). Fourteen were on Great Bay at Durham 30 Jan 2006 (T. Bronson), and 2 wintered at Beaver Lake, Derry, 26 Dec 2001 to 23 Feb 2002 (A. Delorey).

FAMILY GRUIDAE

Sandhill Crane *Grus canadensis*

Status. Now a regular seasonal transient and occasional in summer. It was probably a regular migrant and possibly a summer resident in precolonial times (Wood 1634).

Early reports to 1950. Listed by Belknap (1792) as “Crane, *Ardea canadensis*,” the same name applied by Linnaeus. Allen (1876) believed that this species was regular and perhaps even common in most of New England in precolonial times on the basis of the report by Morton (1632): “Cranes, there are great store, that ever more came there at St. David’s day [March 1]...These sometimes eat our corne...and [are] a goodly bird in a dishe.” Palmer (1949) wrote that at “the time of the early voyagers, cranes appear to have been fairly common on the Atlantic slope. One species, at least, occurred northeast to Nova Scotia, and may have been a rare summer resident in ME.” One shot at Lovell’s Pond near Wakefield in either 1896 or 1897 was bought by N. Dearborn from J. S. Turner, a taxidermist, and was given to what is now UNH at Durham. Though unlabelled, what is almost certainly the same specimen is now #732 in the mounted collection there.

1950 to present. The first report since 1896–1897 was 1 at Dover 13–24 Oct 1970 (N. Bickford, A.C. Borrer *et al.*). Records since then were sporadic to 1990 after which it has been found with greater regularity and it has occurred annually 1999–2009. This increase has probably been related to its more regular occurrence in ME

(Melvin 2002) and VT which culminated in its breeding in both those states by 2006 and by 2007 in MA. Likely the same individual bird appeared at Monroe every year 1999–2009, extreme early arrival being 31 Mar in 2000 (S.B. Turner *et mult.*) and in 2006 and 2007 (both E.A. Emery) and latest in fall being 6 Dec in 2001 (J. Cate, E.A. Emery) and in 2003 (E.A. Emery, P. Powers); more typical arrival was by mid-April and departure was by mid-November.

Spring. Other than the Monroe bird, at least 17 records 1996–2009 between extreme dates of 1 at Concord 4 Mar 2009 (R.A. Woodward *et al.*) to 1 at Rochester 8 Jun 2004 (S.R. Mirick). Nine reports from the coastal region, 4 reports from the Connecticut River valley, and 4 from the Merrimack River valley. All records for 1–2 birds except high count of 4 at Warner 8 Apr 2008 (N. Neider).

Summer. Other than the returning Monroe bird, 1 at Boscawen 21 Jun to 25 Jul 2000 (M. Lahar *et mult.*) and probably the same bird nearby at Bradford 28–29 Jul 2000 (R. Whittier *et al.*).

Fall. Other than the returning Monroe bird, surprisingly fewer reports at this season than in spring: 5 records 1970–2009, of which 3 were in October, between extreme dates of 2 at Hanover 7 Oct 1989 (J. Barrett) and 1 at Concord 12 Dec 1977 (K.E. Dymont). Two reports from the coastal region, 2 from the Merrimack River valley, and 1 from the Connecticut River valley.

Whooping Crane *Grus americana*

Status. Hypothetical. The “Stork, *Ardea ciconia*,” of Belknap (1792) almost surely belongs here. Whooping Cranes were known to be casual migrants in New England in the 17th and 18th centuries, primarily along the coast and most often in fall (Forbush 1912, 1925). Both the White Stork *Ciconia ciconia* and this crane are tall, long-legged species with sword-like bills, white plumage, and black wingtips, so the similarity is compelling. Listed for MA, VT, and New York, as well as states to the south along the Atlantic Coast by several early writers (see Forbush 1912).

ORDER CHARADRIIFORMES

FAMILY CHARADRIIDAE

Northern Lapwing *Vanellus vanellus*

Status. Vagrant from western Europe. One record. One at Rye 2 Mar 1988 (W. Baker) is considered hypothetical only for the lack of 3 observers, a photograph, or specimen. There is at least 1 record for MA (A.R. Keith pers. comm.) and 1 record for ME (ME-BRC website, P.D. Vickery pers. comm.).

Black-bellied Plover *Pluvialis squatarola*

Status. Regular and common spring and fall migrant along the coast, a few nonbreeding birds occasionally lingering through the summer and stragglers occasionally found in winter. As a migrant in the interior, occasional in fall but only casual in spring.

Early reports to 1950. The first report for the state was that of Belknap (1792) who recorded the “Black-breasted Plover, *Charadrius hiaticula*,” presumably the breeding plumage form, as speculated by Allen (1903). While its population was never as large as that of the American Golden-Plover in the early 1800s, it apparently did not decline as much during the market hunting period of the late 1800s, probably because it was warier, less flavorful, did not travel in large flocks, and did not decoy as well. Nonetheless, Goodhue (1922) stated that it declined significantly 1800–1900 and was scarce by 1920. Brewster

(1925) called it a “[r]ather common” fall transient at Lake Umbagog in 1871–1909, and he did not mention any noticeable population decline. His extreme dates for the entire Umbagog region were 25 August to 23 October, and specific New Hampshire records (the first known from the interior) were 2 on 23 Oct 1883 and 1 on 14 Sep 1896, but he implies that he found a few birds near the outlet of the lake, which is in New Hampshire, every fall.

Dearborn (1903) called it “one of the less common shore birds” at the coast, only being found in spring and fall, and Allen (1903) only added that it had been “rather common in August” at Rye Beach about 1868–1871 (*vide* W. Brewster). From about 1900 to the early 1920s it must have increased sharply, since Forbush (1925) called it a “[c]ommon migrant coastwise” for all of New England. White (1932b) found it at Seabrook in 1929 and 1931, including 41 birds there 2 Jun 1931.

It was clearly scarce in the interior during this period: Wright (1911) had no records for the Jefferson region, Dearborn (1898) had none for Belknap and Merrimack Counties, and Goodhue (1877a) and White (1924b, 1937) had no records for the Webster–Concord area. Statewide reports in RNEB for the late 1940s show several, mostly coastal, spring counts in the 75–100 range in mid-May and regular presence as a coastal migrant in September to early November. It was apparently scarce or overlooked at the Isles of Shoals. Allan (1931) had no records for there and Wright (1937a) had but 2: 1 for Ap-

pledore, ME, and 1 “flying over Gosport Harbor” 18 Aug 1936.

The pattern of general increase continued from the 1920s through the 1940s by which time it was relatively common again.

1950 to present. Further increase until the late 1960s, since which time numbers have been stable.

Northbound migration. Earliest known coastal arrival is 1 on 27 Mar 1960 (K.C. Elkins *et al.*), with the next earliest record 5 Apr 2008 at Hampton (S.R. and J. Mirick). Mean arrival date is 14 May, and peak coastal migration period is the last 2 weeks of May and the first week of June. Peak counts are 250 on 29 May 1958 (T. Richards), 300 at Seabrook 24 May 1996 (P.D. Hunt *et al.*), and 500 on 24 May 1963 (K.C. Elkins *et al.*), though numbers over 150 are unusual. Probable late migrants occur into the third week of June (1959, 1965, 1998, 2004) but cannot be distinguished with certainty from possible nonbreeding summer visitors. Probable late migrants or lingerers were 1 at White and Seavey Islands 30 Jun 2000 (D. Hayward) and up to 8 there 6–27 Jun 2001 (D. Hayward *et al.*).

Inland spring records include 1 at Hinsdale 20 May 1959 (T. Richards); 1 at Charlestown 20 May 2007 (E.A. Masterson); 15 there 25–31 May 1961 (T. Richards); 1 at Leonard Marsh, Umbagog, 27 May 1991 (S.B. and M. Turner); 29 at Concord 27 May 2009 and 2 still there 30 May 2009 (both R.A. Quinn *et al.*); 1 at Hopkinton 30 May 1979 (T. Richards); 1 at Boscawen 1 Jun 1995 (H.B. Miller); 1 at the origin of the Androscoggin River 4–5 Jun 1995 (T. Richards, G. Martin); and 1 at Errol 9 Jun 1995 (E. Connors). An exceptional fallout of inland spring shorebirds in 2004 included 1 at Sandwich 23 May (A.J. Vazzano *et al.*), and 8 at Keene 24 May and 32 there 26 May (both J.P. Smith), the latter being the highest inland spring count known. Spring records for Star Island have been 24 May 1964 (V.H. Hebert *et al.*), 3 there 11 May 1969 (ASNH field trip), and a straggler there 17 Jun 1972 (A.C. Borror).

Southbound migration. A possible extremely early migrant was 1 at Seabrook 4 Jul 2000 (M. Resch, D.B. Donsker). There are 7 reports of single birds or small groups in the 7–15 July period 2004–2009, and the earliest sizeable flock of 28 was at the coast 20 Jul 1961 (R.W. Smart, V.H. Hebert); southbound birds nearly always arrive by the first week of August at the latest. Peak migration period is typically in the last 2 weeks of August and the first 3 weeks of September. The highest known counts in this period are 1000 and 750 on 31 Aug and 27 Aug 1966 respectively (R.W. Smart), and 675 on 26 Aug 1968 (E.W. Phinney), but counts over 400 are unusual. Occurs almost annually at Star Island, extreme dates there being 18 Aug 1999 (R.W. Suomala *et al.*) to 13 Nov 1966

(ASNH field trip). Some are regularly present at the coast until the second or third week of November, and sometimes larger numbers are found such as 165 at Seabrook 12 Nov 1971 (E.W. Phinney). All but stragglers have typically left by the second week of December.

Irregular inland in fall. Extreme dates have been from 8 Jul 2007 at Stoddard (R.W. Suomala) to 13 Nov 1968 (T. Richards) when 1 was at Kingston. Inland high counts in this period have been an estimated 200 at Manchester on 26 Sep 1975 (K.C. Elkins *et al.*), 25 at Chesterfield 7 Nov 1959 (T. Richards), and 23 at Dublin 28 Aug 1963 (T. Richards).

Winter. One to 4 birds have been recorded on the December Coastal CBC in 14 separate years from 1953 to 2005. It has occurred into January or later at least 5 times since 1950: 1 at Rye Dec to Jan of 1959–1960 (K.C. Elkins *et al.*), 1 there Dec to Jan 1962–1963 (K.C. Elkins), 1 at Seabrook 30 Dec 1966 to 29 Jan 1967 (K.C. Elkins *et al.*), 1 at Hampton 9 Jan 2000 (S.R. Mirick, P.D. Hunt), and 1 at New Castle 22 Feb 1967 (H.C. Anderson).

American Golden-Plover *Pluvialis dominica*

Status. Regular fall migrant in small numbers both inland and in the coastal region including at the Isles of Shoals. Known only 4 times in spring. Formerly common to abundant but greatly reduced by the 1890s and only partially recovered since.

Early reports to 1950. The first probable reference to this species in New Hampshire is that of Belknap (1792) who listed the “Large Spotted Plover, *Charadrius maculatus*.” Allen (1903) recounts records at Rye Beach 26 Aug 1868, 29 Aug 1868, and 27 Aug 1871 (all by W. Brewster; 1871 record is MCZ #271657). There are 6 other specimens at the MCZ taken at coastal localities in 1880–1905. Forbush (1912, 1925) suggests that it was an “irregularly common to abundant” fall migrant both on the coast and in the interior of all of New England until it began to replace the Passenger Pigeon as a species heavily hunted for the market in the 1870s, and that it declined about 90% in New England 1870–1885. That this pattern was paralleled in New Hampshire is suggested by Brewster (1925) who called it a “transient visitor in autumn, formerly of regular and very common occurrence” in the 1870s at Lake Umbagog between extreme dates of 1 September and 26 October. But Brewster’s last records there were 9 on 29 Sep 1887, 1 on 6 Oct 1890, 4 on 10 Sep 1894, and 4 on 22 and 23 Sep 1898, all birds seen near the outlet of the lake which was then in Cambridge but is now in Errol.

Richards (1954) felt that this species was common inland and at times was more abundant along the coast than Black-bellied Plover until the late 1800s, especially after easterly storms during fall migration, but by 1900 it had

been greatly reduced. Dearborn (1898) had no records for inland Belknap and Merrimack Counties, and at the coast Dearborn (1908) called it a “regular, though scarcely an abundant visitant in May, August, September and October,” noting particularly a “flight” at Hampton in mid-October 1900.

Goodhue (1922) noted “three specimens taken at Concord some years since.” White (1924b, 1937) had only the same 3 to mention, 1 taken in the 1880s (N.E. Martin) and 2 taken “a few years later” (1890s?) by F. S. Moulton. With the end of permitted hunting in New Hampshire, mostly in 1907 and completely in 1915, and protection in other states, the population began to increase slowly. Griscom and Snyder (1955) state that it had become “regular and at times common in fall” in MA by 1930, and it is probably safe to assume that New Hampshire witnessed an increase by that time which continued slowly through the 1940s.

1950 to present. A continued modest increase into the 1990s followed by stable to slightly lower numbers.

Northbound migration. Casual. Five records: 2 at Hampton 7 Apr 1955 (T. Richards), 1 at Hampton Falls 26 Apr 1980 (R.A. Quinn), 3 inland at Hinsdale 25 May 1988 (J. Coleman), an exceptional 44 at Rye 30 May 1991 (P.D. Hunt, A. Leukering), 1 at North Hampton 9 Apr 2011 (J. Lambert; photo).

Southbound migration. Regular. Earliest known arrival is 1 adult at Seabrook 10 Aug 1974 (ASNH field trip), peak migration period both inland and at the coast being the month of September and the first week of October when juveniles migrate through the state. In many years, more individuals and larger flocks are recorded inland along the 2 major river valleys than are seen along the coast, virtually all such inland records being south of the White Mountains. The only exceptions have been 1–4 at Whitefield 15–30 Sep 1962 (Mann); 1 flying over Harper’s Meadow, Umbagog, 1 Oct 2003 (R.A. Quinn); 6+ at Lake Umbagog 4 Oct 2001 (R.A. Quinn *et al.*); and 2 at Pittsburg 9 Sep 1964 (W.W. and G.L. Kidder). In 1950–1980, of 499 birds reported, 167 (33%) individuals were recorded in the coastal region and at Star Island in comparison to 332 (67%) reported from the interior, primarily in the Merrimack River valley. This pattern has continued since 1980. Highest known interior counts are all from Manchester: 79 on 30 Sep 1972 (R.W. Lawrence), 45 on 6 Sep 1972 (K.C. Elkins *et al.*), and 40 on 8 Oct 1976 (K.C. Elkins *et al.*), numbers over 20 being exceptional. Highest known coastal count is 21 at Durham 30 Aug 2009 (J. Lambert), but typical counts are in the 1–9 range. The latest known fall coastal records are 3 in Durham 2 Nov 2003 (R.W. and M. Suomala), 1 at Seabrook 5 Nov 2006 (S.R. and J. Mirick), and 1 exceptionally late at Hampton 27 Nov 2003 (S.R. Mirick, D. and L. Stokes). The latest interior report is 2 at Concord

15 Nov 1980 (R.A. Quinn). Elevation record for the state is 1 found near the summit of Mt. Moosilauke close to 4800 feet on 11 Oct 2011 (M. and B. Lipson; photo).

There are only about 10 reports from the Isles of Shoals, the first known being 2 at Star Island 11 Sep 1966 (ASNH field trip); extreme dates there are 18 on 7 Sep 1969 (R.W. Smart *et al.*) to 2 seen 7 Oct 1972 (D.W. Finch *et al.*). Three were seen flying over the ocean just east of Star Island 10 Sep 1972 (D.W. Finch *et al.*). It is almost certainly a regular migrant over the islands.

Wilson’s Plover *Charadrius wilsonia*

Status. Vagrant from the south in spring. Two records: 1 in Hampton Harbor at Seabrook 15–16 May 1993 (S.R. Mirick, D.J. Abbott *et mult.*; photo; Perkins 1993) and 1 at Seabrook 1 and 8 May 2005 (B. Clifford, S.R. Mirick, D.J. Abbott *et al.*; photo NHBR 24 [1]: 6). Early reports, the details of which have not survived, were strongly doubted by Allen (1909) and Forbush (1925). Over 35 records for MA (Veit and Petersen 1993, BO database 2010) and over 12 records for ME (ME-BRC website, P.D. Vickery pers. comm.); no accepted records for VT (C.C. Rimmer pers. comm.).

Semipalmated Plover *Charadrius semipalmatus*

Status. Regular northbound migrant in spring, common at the coast and in small numbers inland. Regular southbound migrant in summer and fall, common to occasionally abundant at the coast, uncommon to rare in the interior.

Early reports to 1950. Reported by Brewster (1925) at Lake Umbagog where he found it a “transient visitor in late summer and early autumn,” numerous until 1890 and occasionally appearing in flocks of 40–50, but declining very sharply from then to his last early fall visit in 1905. His extreme dates at the lake, though not certainly for New Hampshire sites, were 19 July to 9 October, peak numbers being found in August and early September.

Dearborn (1898) called it “an occasional migrant” in Belknap and Merrimack Counties, having a record for 2 at Alton 23 Aug 1889. Howe (1901–1903) reports 1 collected near Bridgewater on 23 Aug 1902. Later, Dearborn (1903) found it “abundant on every beach” in the coastal region in the “latter half of August and early September” and in spring “about the middle of May.” Allen (1903) found it “common” on the coast in spring and fall and “less common” inland. Thayer (1912) considered it a rare migrant at Dublin. Wright (1911) called it “[a]n uncommon spring and fall migrant” in the Jefferson region, having records 27 and 28 May 1903 and 5 late August or early September reports. Goodhue (1922) said it was “sometimes found in the interior of the state when migrating.”

One was seen at Cherry Pond, Jefferson, on 6 Sep 1919 (C.H. Rogers). Considered a “straggler” at Crawford Notch by Marble (1927), who saw 1 there 3 Sep 1908. White (1929) reported it as early as 15 July of an unnamed year at Seabrook. Reports submitted to RNEB include 2 birds at Hanover 19 May 1940 in the Connecticut River valley (C.A. Reynolds), single inland fall migrants 8 and 9 Aug 1943 at Hanover (D.E. Wade) and 30 Sep 1949 at Dixville Notch (T. Richards), 150 at Seabrook 17 Aug 1948 (T. Richards), and 40 there as late as 6 Oct 1949 (T. Richards).

The first known record for the Isles of Shoals was 13 Aug 1929 (Allan 1931), the state not specified. Wright (1937a) called it “scarce” there in 1935 but said it was seen “more commonly” in 1936, the earliest report being 7 Jul 1936 but the state not recorded. Jackson (1947) said it was “not abundant” there, perhaps implying that it was a regular transient in modest numbers.

The report of a possible nesting at Seabrook (White 1931b; Silver 1957) seems highly improbable and was not corroborated; very likely a confusion with Piping Plover.

In summary, this bird was a common to abundant coastal and uncommon to common inland migrant until 1890–1910 after which it declined sharply. Though unrecorded in the Merrimack River valley near Concord by White (1924b, 1937), it appears to have become regular as both a coastal and inland migrant by the 1940s.

1950 to present. Notable increase in reports up to the early 1960s after which the number of reports has declined.

Northbound migration. Earliest known arrival is 1 at Rye 3 May 1997 (S.R. Mirick), and mean arrival date is 15 May. Peak coastal migration period is the last 2 weeks of May, and peak coastal counts are an exceptional 600 at Seabrook 24 May 1996 (S.R. Mirick *et al.*), 176 there 19 May 2009 (S.R. Mirick), and 175 there 23 May 2008 (B. Griffith *et al.*); there are a few counts in the 75–100 range but otherwise counts over 50 are scarce. Latest coastal spring records are 1 at Seabrook 9 June in 1998 and 2007 (both S.R. Mirick); a probable summer lingerer was at Seabrook 30 Jun 2001 (S.R. Mirick, D.J. Abbott).

Inland, this species has been recorded much more frequently and in larger numbers in the Connecticut River valley than in the Merrimack River valley. Earliest inland report is 8 at Monroe 12 May 1999 (P. Powers *et al.*) and latest is 1 at Whitefield 6 Jun 2002 (R.A. Quinn *et al.*). An unusual count was 40 at Leonard Marsh, Lake Umbagog, 27 May 1991 (C.J. Martin, L. Rowe). An exceptional fall-out of shorebirds in 2004 brought an unprecedented 182 birds to inland localities: 23 to Sutton 23 May (P. Newbern), 33 to Sandwich 26 May (R.S. Ridgely), 34 to Keene 24 May, and 92 there 26 May (both J.P. Smith). The latter is the highest inland count known. Otherwise, the highest

inland spring counts have been 40 at Errol 27 May 1991 (S.B. and M. Turner) and 20 at Surry 24 May 2008 (L. Tanino *et al.*); usual records are in the 1–4 range.

Southbound migration. Unlike in spring, this species occurs over a longer span of time and in much greater numbers. Earliest coastal arrival is 2 Jul 1995 (S.R. Mirick, N. Pease). There are several other reports in the first and second weeks of July, though in some years birds are not noted until the last week of the month. Peak coastal migration period is the month of August. Highest recorded counts are 2100 at Seabrook 14 Aug 1984 (R.W. Stephenson), 2000 on 30 Jul 1961 (V.H. Hebert), 1000 on 3 Aug 2000 (J. Williams), and 830 at Hampton 22 Aug 1999 (S.R. Mirick), though there are few other counts over 500. All birds are usually gone by the first week of November. There are few records after mid-November, the latest of which are 1 at Seabrook 27–28 Nov 1966 (R.W. Lawrence *et al.*), 1 at Rye 5 Dec 1992 (S.R. Mirick *et al.*), and 1 at Hampton 5 Dec 2004 (S.R. Mirick *et al.*). There are almost no records from Star Island where it is probably regular: 1 on 14 Sep 1978 (R.S. Holt) and 1 26 Sep 2010 (S.R. Mirick).

Inland, southbound birds seem to be found with about equal frequency in both the Connecticut and Merrimack River valleys. Peak migration period is the same as at the coast, and extreme inland dates are 1 at Canterbury 19 Jul 1993 (R.A. Quinn) to 2 at Charlestown 20 Oct 1967 (W.W. Kidder). Highest inland fall count is 14 at Pittsburg 22 Aug 1952 (T. Richards).

Piping Plover *Charadrius melodus*

Status. Regular though declining species since the early 2000s breeding on coastal beaches in very small numbers. Two inland records. Now considered an Endangered species in New Hampshire.

Early reports to 1950. First known report for the state is Dearborn (1903) who said it “appears to be a regular migrant along our coasts.” It may have been a regular migrant and breeder in the colonial era and before. However, it was heavily hunted like other shorebirds at least until 1907 and so, as suggested by Palmer (1949) and Richards (1954), was probably only a sporadic breeder from about 1890 until about 1910. Forbush (1925) stated that it was then “increasing and fast becoming a common summer resident coastwise” in all of New England. White (1932b) found this species at the Seabrook dunes 30 Jun 1926, 28 Jun and 9 Jul 1928, 9 Apr 1929, 7 Apr 1931, and proved breeding in 1928 by the discovery of a nest with 4 eggs on 1 Jul and chicks on 19 Jul. He also found several pairs and 1 or more nests containing a total of 4 eggs at Seabrook 2 Jun 1931 and 22 May 1932, and young of the year were seen later each year. One was seen at Seabrook 3 Apr 1938 (H. Shaw), but no further reports until 3 at

Seabrook 26 Apr 1947 (T. Richards) and 2 at Hampton 14 Jun 1949 (R. Perkins), though a few pairs apparently remained through this period.

Wright (1911) found 2 apparent migrants “on the shore of Davis Pond,” Jefferson, 7 Sep 1903. Though the location seems improbable, migrants from the population in the central United States could have been the source, in a situation similar to that of Western Willets. Both the inland and coastal populations were much higher then than since 1950.

1950 to present. Decline in numbers; nesting ceased in 1971 but began again in 1997. Regional breeding population listed as stable by Hunt (2012).

Northbound migration. Earliest known arrival is 1 on 12 Mar 1955 (K.C. Elkins), unusually early as the next report is not until 20 Mar 1970 (R.W. Smart, E.W. Phinney); mean arrival date is 4 April. Peak migration period appears to be the last week of March and the first 3 weeks of April, and highest known count in this period is 8 on 15 Apr 2001 (S.R. Mirick, J. Matthews), which may have included both resident birds and a few transients. Migration is usually over by late April, late stragglers being indistinguishable from summer residents; an exceptional count of 21 at Seabrook 24 Jun 1998 (S.R. Mirick) probably included both northbound migrants and local residents with their young of the year. In this species, a record from the Exeter wastewater treatment plant 17–18 May 2002 (M. Suomala *et al.*) qualifies as inland.

Summer and breeding. In 1950–1971 the number of known breeding pairs ranged from 1 to at least 4 and possibly 5 pairs when 11 adults and 14 young were seen 21 Jun 1958 (K.C. Elkins), though no more than 1 pair was found 1961–1971. The only known nesting site at the time was Seabrook harbor near the mouth of the Hampton River. Eggs have been observed being incubated as late as 31 May 1969, young still in the nest 8 Jun 1961 (T. Richards), and an unusually late chick hatched in the 28 Jun to 2 Jul 1970 period (R.J. Bradley, D.J. Abbott). At least 1 pair nested at Seabrook every year from 1965 to 1971 with the possible exception of 1967 (Smith 1979). The last confirmed nest was 1 containing 4 eggs seen 24 May 1971 (L.G. Phinney *et al.*), though a pair performing distraction displays 12 May 1984 may have attempted to nest; those birds were never seen again after a very high tide the next night (Foss 1994). Occasional nonbreeding birds were present in June and July 1971–1996 but disturbance of the nesting area by increasing numbers of people adequately accounts for the cessation of breeding. In Jun 1997, 5 nests were found for the first time in 26 years. Since then a NHFG protection effort for nesting only occurring at Hampton and Seabrook has resulted in the following (data from NHFG website):

Year	# nesting pairs	# chicks hatched	# chicks fledged	productivity
1997	5	18	3	0.6
1998	5	16	12	2.4
1999	6	20	16	2.7
2000	6	18	14	2.3
2001	7	19	15	2.1
2002	7	12	1	0.1
2003	7	15	7	1.0
2004	4	11	4	1.0
2005	3	7	0	0
2006	3	9	2	0.7
2007	3	4	1	0.3
2008	3	11	6	2.0
2009	5	8	2	0.4
2010	4	11	6	1.5
Average	4.9	12.8	6.4	1.2

Breeding population listed as increasing by Hunt (2009b).

Southbound migration. Earliest southbound migrants cannot be told with certainty from summer residents but probably arrive by mid-July; earliest known likely migrants are single birds at White and Seavey Islands 23 Jul 1998 (J. Ellis, D. Hayward) and 27 Jul 2000 (D. Hayward, M. Charette). Breeding birds are usually gone by the first week of August. There are only 3 records of presumed migrants after the third week of August. Stragglers were at Seabrook 20 Sep 1989 (S.R. Mirick), 7 Oct 1995 (M. and R.W. Suomala), and 24 Oct 1964 (K.C. Elkins, R.W. Lawrence *et al.*).

Killdeer *Charadrius vociferus*

Status. Common spring and fall migrant; summer resident and breeder. Irregularly lingers into December and rarely later, and thought to have survived the entire winter twice. Greatly reduced by 1890, became common again, and recently has declined slightly.

Early reports to 1950. First reported for New Hampshire by Belknap (1792) as the “Kildee, *Chardrius vociferus*?” In the precolonial and early colonial eras it must have been scarce because its preferred open field habitat was scarce, but it surely became more numerous by 1800 as agricultural acreage increased. It then appears to have declined sharply by 1850 as it did in MA (Griscom and Snyder 1955). Allen (1903) gives records at Rye Beach on 31 Aug 1868 and 2 there on 4 Aug 1871 (W. Brewster), but Goodhue (1877a) did not list it at all for the Webster area which was in the heart of the Merrimack River valley farming region. Uncontrolled shooting was surely re-

sponsible for its decline.

In the great southerly storm of 24–25 Nov 1888, large flocks were spread all along the New England coast from Nantucket to Grand Manan. Chadbourne (1889) reports numbers at the Isles of Shoals, and Torrey (1889) records that a few lingered there until the last week of Feb 1889 (*fide* C. Thaxter). Shaw (1889) states that the same storm brought birds to Great Boar's Head, Hampton Beach, 27 Nov 1888. They were seen almost daily until 25 Dec, a few remaining until Feb 1889. The only other known early record for the Isles of Shoals appears to be 1 there 1 Apr 1930 (Allan 1931), the exact state not specified.

Allen (1903) noted 1 shot at Jefferson in Dec 1893 (*fide* F.B. Spaulding). Brewster (1925) had only 1 record at Lake Umbagog in 1871–1909, 1 seen at the outlet of the lake which was then in Cambridge 2 Oct 1894. Dearborn (1898) did not even list it for Belknap and Merrimack Counties. Later (1903) he said it had formerly (*i.e.*, 1880s) nested at Rollinsford (*fide* G. Wentworth) and that even earlier (*i.e.*, 1860s) it had bred near Portsmouth (*fide* J. Turner), though it was only an “infrequent” spring and fall migrant in the coastal region at the time of writing.

Cram (1912) reported 1 at Hampton Falls in Mar 1901 and a pair nesting there in Jun 1911. Thayer (1912) found it for the first time in Dublin in the summer of 1912. A pair nested at Exeter each year in 1924–1929, and a pair nested at Kensington in 1927 (L.M. Crosbie). Forbush (1925) considered it a “[r]are migrant chiefly coastwise and rare summer resident in the southern part [of the state and an] accidental winter resident.” White (1924b) reported a specimen taken at Concord 10 Apr 1896 (N.E. Martin) and a nesting in 1916 (L.J. Rundlett) but called it “very rare” at the time. But thirteen years later, White (1937) had 9 more records from 1926 onwards, including a flock of 11 in Apr 1927 and breeding records in 1936 and 1937. Reports in the RNEB in 1936–1949 show a pattern of regular arrival from late March to mid-April, presence through the summer, and occasional late migrants from early October to mid-November.

To summarize, while probably not numerous in the pre-colonial era, this species must have increased as land was cleared for agriculture by 1800. After that it declined sharply due to shooting until it was scarce in 1850 and nearly extirpated by 1880–1890. With the end of most shooting about 1907, numbers began to increase slowly, and it began to reestablish itself as a breeding species. It became uncommon to locally common again by the 1930s, the pattern of increase continuing into the 1940s.

1950 to present. The trend of increase continued until the 1970s, since when numbers have been stable or have declined slightly as suitable habitat has been lost to forest succession and a decline in agricultural acreage. Breeding population listed as declining by Hunt (2009b).

Northbound migration. Earliest known arrivals are 1 at Fremont 17 Feb 2006 (T. Bronson), 1 at Walpole 20 Feb 2000 (R.E. Ritz), and 3 times on 25 February (1959, 1974, 1975); 1 as far north as Littleton by 29 Feb 1976 (R.J. Bradley). Mean arrival date is 9 March, and peak migration period is the last 2 weeks of March and the first 2 weeks of April. Peak counts in this period have been 80 at Concord 9 Apr 1994 (R.A. Quinn *et al.*), 100+ at Lyme 11 Apr 1971 (F. Bowes), and 138 at Monroe 10 Apr 2000 (R.J. Bradley). Counts in the 10–30 range have become routine at favored localities since 1961. Latest migrants cannot be distinguished from summer resident birds. Extreme spring dates for Star Island are 31 Mar 1979 to 25 May 1978 (both R.S. Holt).

Summer and breeding. Now to be expected nearly statewide in appropriate habitat at lower elevations. A slow but general decline in the acreage of open field habitat since 1970 appears to have reduced the size of the breeding population slightly. Young are frequently hatched by the second week of May. Breeding was confirmed in over 50 localities in 1950–1980. In the *Atlas of Breeding Birds*, Foss (1994) reports 113 blocks for confirmed or probable breeding statewide in 1981–1986, largely along the major river valleys, in the central Lakes Region, and in the coastal region, all south of the White Mountains. It is also a local breeder in appropriate habitat north of the White Mountains. BBS data show a modest annual population trend decline in both 1966–2009 and 1999–2009, more rapidly in the latter period (Appendix IV).

Southbound migration. Postbreeding flocks sometimes begin to collect as early as late June, and the onset of migration is suggested by 61 at Fremont 10 Jul 2005 (T. Bronson), 49 at Canaan 20 Jul 1996 (P.D. Hunt), and 82 at Canterbury 13 Jul 1998 (R.A. Quinn). Peak migration period is from the last week of August through the third week of October, highest counts in this period being 100+ at Pittsburg 12 Sep 1964 (F.T. Scott); 100+ at Walpole 9 Oct 1969 (W.W. and G.L. Kidder); 120 at Durham 9 Sep 2004 (R.W. Suomala, S.R. Mirick); 125 at Bedford 14 Oct 1967 (R.W. Lawrence); 138 at Durham 1 Sep 2009 (L. Kras); and 100 at Durham as late as 16 Oct 1975 (C.A. Federer), though counts over 75 are unusual. A transient was at Star Island 18 Aug 2000 (R.W. and M. Suomala). Most migrants are gone by late November, though birds have lingered into December in at least 16 seasons, 6 times in the interior: 1 at Littleton 9 Dec 1961 (R.J. Bradley), 1 at Pittsburg 9 Dec 1965 (F.T. Scott), 1 at Monroe 13 Dec 1957 (R.B. Emery), 1 at Londonderry 9 Dec 1979 (D.M. MacRae), 1 at Concord 19 Dec 1993 (CBC), and 1 at Concord 9 Dec 2008 (H.P. Nevers).

Winter. With 1 exception, single birds have been recorded in the coastal region into January and rarely into February of 12 winter seasons from 1956 through

2007. The exception was the mild season of 1966–1967 when 11 birds were found at the coast 30 Dec 1966, of which 4 remained at Rye 15 Jan 1967; 1 was still there 8 Feb 1967 (L.G. Phinney *et al.*). Inland, 1 was at Pembroke 8 Feb 1997 (W.M. Goodwill) and 4 were at Milford 22 Feb 1997 (R.W. and M. Suomala). Other than the exceptional winter of 1889 mentioned above, there is only 1 recent instance where birds possibly survived the entire winter: 2 seen at Exeter 19 Dec 1953 (D.W. Finch) were still there 19 and 24 Feb 1954 (G.P. Baker *et al.*). One was at Star Island 4 Jan 1976 (L.G. Phinney *et al.*).

FAMILY HAEMATOPODIDAE

American Oystercatcher *Haematopus palliatus*

Status. Rare coastal visitor from the south and a transient to and from breeding sites in ME, occurring much more frequently since the 1990s. The eastern MA breeding population expanded greatly after 1990 and it was nesting in ME by 1996. Still unreported in New Hampshire after the first of August.

Early reports to 1950. Audubon (1835) and Peabody (1840) reported it to be a regular summer resident from MA north to Labrador, so it must have been a regular migrant and possible summer resident at the coast and on the Isles of Shoals in the precolonial and colonial periods. A report for the Concord area (Abbott 1906) is not accepted.

1950 to present. Records now extend from early April through late July, the majority falling between mid-May and mid-June. One at Hampton 5 Apr 1970 (D.J. Abbott, L.G. Phinney), 1 at Star Island 15 Jun 1982 (D. Quimby *fide* A.C. Borrer), 2 at Seabrook 10 May 1992 (S.R. Mirick), 1 at Seabrook 9 Jul 1996 (G. Mitchell), 2 at North Hampton 29 Jun 1998 (S.R. Mirick), 2 flying by White and Seavey Islands 24 May 1999 (D. Hayward, D. Trested). It has occurred in spring of every year 2000–2008 for a total of 15 reports, most frequently at White and Seavey Islands between extreme dates of 2 May in both 2000 and 2002 (D. Hayward) and 29 Jun 2001 (D. Hayward). Later summer records there began in 2005: 1 on 26 Jul 2005 (M. Barney *et al.*), 1–2 there 8 Jun to 3 Jul 2006 (D. and M. Hayward *et al.*), 1 on the mainland coast 15 Jul 2006 (J. Reagan), and 3 at the coast 20 May 2007 (D. Wendelken *et al.*). Three were on White and Seavey Islands 8 Jul 2007 (D. and M. Hayward *et al.*). An apparent southbound migrant flew past Hampton 8 Jul 2009 (S.R. Mirick). Three were at Seabrook marshes 12 Jun 2010 (L. Medlock *et al.*; photos). The only known inland report is of 2 at the Rochester wastewater treatment plant 17 Jun 2011 (D. Hubbard, A. Kimball).

FAMILY RECURVIROSTRIDAE

American Avocet *Recurvirostra americana*

Status. Vagrant. Five records: 1 seen at Seabrook 22 Aug 1970 (R.R. Rathbone, K.C. Elkins, V.H. Hebert, E.W. Phinney *et al.*), 1 at Rye 10 Aug 1983 (E.G. Locke), 1 at Rye 30 May 1990 (D.J. Abbott *et al.*), 4 at Hampton 15 Sep 1995 (R.A. Woodward; Ellison and Martin 1996), 1 at Hampton 24 Aug to 1 Oct 2011 (S.R. Mirick *et mult.*). Annual in MA (Veit and Petersen 1993, BO database 2010) and over 8 records for ME (P.D. Vickery pers. comm.).

Black-necked Stilt *Himantopus mexicanus*

Status. Hypothetical. Two records. As reported by Dearborn (1903): “Some years ago a summer visitor at Rye Beach brought [one] to Mr. (S. Albert) Shaw of Hampton to be mounted. It was mounted, but what became of the bird or the man who brought it, I have not been able to ascertain.” Its whereabouts are still unknown, and it is possible that it was not taken in New Hampshire. One seen at Rye 23 May 1998 (A. Stewart) is considered hypothetical for lack of 3 observers. At least 30 records in MA (Veit and Petersen 1993, BO database 2010) and at least 5 records for ME (P.D. Vickery pers. comm.).

FAMILY SCOLOPACIDAE

Spotted Sandpiper *Actitis macularius*

Status. Common spring and fall migrant, common summer resident and breeder at lower elevations and in appropriate habitats statewide. This status seems little changed for the last century.

Early reports to 1950. The first report for the state is that of Belknap (1792) who listed the “Rock Bird, *Tringa maculata*.” Virtually every subsequent writer about New Hampshire birds has called it “common,” regardless of the part of the state being discussed. Therefore, the following comments will be limited to reports that are unusual or of interest for one reason or another.

Chadbourne (1887) recorded 1 at 3100 feet elevation in Great Gulf, Mt. Washington, 8 Jul 1886, this being the elevation record for the state. Spaulding (1898b) discovered a nest at Lancaster in the summer of 1898 containing the unusual number of 5 eggs. Brewster (1925) found it at Lake Umbagog as late as 18 October of an unspecified year, not certainly in the New Hampshire part of the lake but later than any other record known north of the White Mountains. White (1932b) recorded eggs in 2 nests hatching between 2 and 15 Jun 1931 at Seabrook. Wright

(1937a) recorded it breeding on both Star and White Islands in the Isles of Shoals. Reports submitted to RNEB show it to be a regular and common spring and fall migrant in 1936–1949; of particular interest are the highest known single-day count of 75 at Hanover 19 May 1940 (R.L. Weaver *et al.*); 1 at New Hampton 5 Nov 1945 (V.H. Hebert), a late state record; and 1 at Hanover 31 Mar 1946 (W.E. Lanyon), the earliest known state record.

1950 to present. Continues to be common though numbers may have declined slightly; population trend listed as declining (Hunt 2012).

Northbound migration. Earliest known arrival in this period is 1 at Exeter 4 Apr 1954 (D.W. Finch *et al.*), the next earliest report being 1 at Andover 19 Apr 1972 (K.C. Elkins). Mean first arrival is 29 April, and peak migration period is the month of May. Peak counts in this period are 40 in the coastal region 23 May 1965 (A.R. Keith *et al.*) and “about 30” in the same area 24 May 1964 (V.H. and R.C. Hebert), though counts over 15 in a day are few. The earliest known arrival date for Star Island is 3 there 4 May 1975 (D.J. Abbott *et al.*). Sixteen were at White and Seavey Islands 27 May 2002 (D. Hayward *et al.*) and 15 were there 18 Jun 2003 (M. Barney *et al.*). Migration is thought usually to be over by mid-June, late stragglers being indistinguishable from summer residents.

Summer and breeding. In 1950–1980 and based only on published reports, breeding has been proved by the observation of young in 10 towns and recorded in at least 18 other localities in breeding season where they also probably bred. In the *Atlas of Breeding Birds* for 1981–1986, breeding was confirmed or believed probable in 70 atlas blocks, spread fairly uniformly statewide (Foss 1994). It has probably been a regular nester on nearly all the larger islands in the Isles of Shoals at least since first reported there by Thaxter (1894). A minimum of 9 nests were found there in Jun 1972 (A.C. Borrer), of which 6 nests were on Star Island. In 1980, 5 nests were on Star Island and single nests were on Lunging and White Islands. Thirty birds were counted on White and Seavey Islands 15 Jul 1999 (D. Hayward, D. Trested), and there were 14 nests there in summer of 2000 (D. Hayward *et al.*) following the removal of the gulls that bred there up until 1997. At least 8 nests were there in 2005. A bird was found at 3100 feet elevation in Lincoln in the summer of 1968 (T. Richards), equaling the elevation record for the state. Postbreeding dispersal of adults occurs in mid- to late July after young are fledged. BBS data show a small annual population trend decline averaging under 1% per year in both 1966–2009 and 1999–2009 (Appendix IV).

Southbound migration. An early migrant, movement is evident by the second week of July, and peak migration period is from the last week of July through August. High counts in this period have been 35 at White and Seavey Islands 15 Jul 2002, possibly a combination of local adults

and young, (D. Hayward *et al.*); 25 at Littleton 23 Jul 1960 (R.J. Bradley); and 25 at the coast 31 Jul 1966 (R.W. Smart). Latest known dates for the White Mountains northward are 4 Oct 1954 (N.C. Nash) at Franconia and 9 Oct 1969 (R.J. Bradley) at Littleton. South of the mountains, latest in the Connecticut River valley is 1 at Chesterfield 28 Nov 1998 (Quinn 2009), in the Merrimack River valley is 1 at Concord 8 Dec 1973 (M. Smith *in* Quinn 2009), and at the coast is 2 at Hampton 9 Nov 1980 (R.W. Smart). Latest known date for the Isles of Shoals is 1 at Star Island 4 Oct 1970 (R.W. Smart *et al.*), though it has surely occurred there later.

Solitary Sandpiper *Tringa solitaria*

Status. Regular spring and fall migrant, primarily inland, numbers varying from year to year. The number of transients has declined noticeably since about 1900.

Early reports to 1950. The “Wood Snipe, *Scolopax fedoa*,” of Belknap (1792) certainly belongs here, despite the scientific name he used. The next report for the state appears to be that of Brewster (1925) who found it “abundantly during migration” at Lake Umbagog in both spring and fall in 1871–1909. His extreme dates were 14–19 May in spring and 20 July to 20 October in fall, though these dates may not have been for New Hampshire localities. His highest count was 2 Aug 1873, when he writes that there must have been between 150 and 200 birds along the Androscoggin and Magalloway Rivers in New Hampshire. His supposition of breeding (1925) near the Profile House, Franconia Notch, 30 Jul 1866, though repeated by Maynard (1871), was not confirmed and was undoubtedly in error, the nearest proved breeding locality being in central Quebec.

Maynard (1871) mentions 1 collected at Errol 1 Nov 1869, but disagreed with himself later (1873) giving the date as 31 Oct. The specimen cannot now be found, and the present authors agree with the position of Griscom and Snyder (1955) that though the record is “possibly correct” it is not accepted.

Goodhue (1877a) recorded this species as common in summer at Webster and breeding there, certainly an error for the Spotted Sandpiper which he omitted from that list as pointed out by Elkins (1961) and a mistake Goodhue (1922) did not make later. Dearborn (1898) called it a “common migrant” in Belknap and Merrimack Counties and thought it a summer resident there but had no proof of that. In the coastal region Dearborn (1903) also considered it common, 1 lingering at Hampton in spring as late as 10 June of an unspecified year.

Allen (1903) related a June record at “a small pond near the summit,” or close to 2800 feet elevation, on Mt. Kearsarge South (*fide* C.F. Goodhue) and speaks of records of birds found “repeatedly” at about 1580 feet el-

elevation on Mt. Monadnock in “breeding season” (*vide* G.H. Thayer), but still no breeding was proved. Allen (1903) also recorded the elevation record for the state, birds “occasionally” seen at Carter Notch at 3360 feet in “early September.” The supposition by Forbush (1925) that this species was “probably breeding” in the northern parts of New Hampshire appears to have been based on 1 or more of the above reports, but was without other foundation.

White (1937) noted that the species’ numbers seemed to have declined since about 1900 in the Concord area, his extreme spring dates being 7 May (1930) to 23 May, and his latest date in fall being 16 Oct 1929, the latter bird having been collected (MCZ #292034). Records submitted to RNEB in 1936–1949 show it to be a regular and relatively common spring transient from the first to the last week of May both inland and at the coast with the peak known count for the state of 37 at Hanover on 19 May 1940 (R.L. Weaver). During this same interval it was reported to be regular and moderately common from late July to 18 Oct 1942 at Andover (K.C. Elkins).

At the Isles of Shoals, S. F. Baird (in Baird *et al.* 1884) reports seeing a pair and 4 young on Appledore Island, ME, in “early” Aug 1878; despite his comments to the contrary, what he must have seen were Spotted Sandpipers since the Solitary is a tree nester and he stated that the island was treeless at the time. Also, Palmer (1949) did not accept this as a breeding record for ME. Wright (1937a) found it “rather commonly” on Appledore from 29 Jul 1934 until the end of that summer but found none in 1935 or 1936. Such annual differences are probably the reason Jackson (1947) called it an “erratic migrant” at the Isles of Shoals.

1950 to present. A slight decline in this period.

Northbound migration. Earliest known arrival is 1 at Exeter on the exceptional date of 3 Apr 1954 (D.W. Finch *et al.*), the next earliest report being 15 Apr 1971 (D.J. Abbott) at Durham. Mean arrival date is 4 May, and peak migration period is typically the first 3 weeks of May. High count in this period was an exceptional statewide fallout of 134 birds 11–24 May 1996 (P. Lacourse, T. Richards *et mult.*) which included single-day totals of 37 at Canterbury 12 May (R.W. and M. Suomala) and 26 at Concord 13 May (T. Richards); otherwise counts over 10 in a day now are unusual. This species is recorded for more localities and in larger flocks inland in spring than in the coastal region. There are no known certain spring records for the Isles of Shoals. As noted by Elkins (1964), this species is found more often in wet springs. Latest known spring migration date is 1 at Concord 4 Jun 2004 (R.A. Quinn *et al.*).

Southbound migration. Though nonbreeding birds may rarely linger through June into July, none has been recorded doing so since 1950. Earliest presumed migrants

were 1 at Littleton 2 Jul 1995 (R.J. Bradley) and 1 at New Hampton 8 Jul 1978 (V.H. Hebert). Birds regularly appear in the interior, principally along the 2 major river valleys, by the last week of July. Peak migration period is the last 2 weeks of August and the first 3 weeks of September. Highest counts in this period are 33 at Canterbury 21 Aug 2006 (E.A. Masterson) and 25 at Andover 17 Sep 1956 (K.C. Elkins), but counts over 10 are unusual. Elkins (1964) notes that more birds are found in dry fall seasons when river and lake edges have receded. As in spring, more birds are recorded inland in fall than at the coast. Latest record for north of the White Mountains is 1 at Littleton 24 Oct 1965 (R.J. Bradley). Latest in the lower Connecticut River valley is 1 at Charlestown 30 Oct 1965 (Quinn 2009), in the Merrimack River valley is 1 at New Hampton 10 Nov 1975 (R.C. Hebert), and in the coastal region is 1 at Rye 7 Nov 1969 (Quinn 2009). Quinn (2009) listed 13 records between 18 and 31 October plus the 2 November records.

Greater Yellowlegs *Tringa melanoleuca*

Status. Regular and common spring and fall migrant at the coast and in much smaller numbers in the interior, typically much more numerous in fall. Casual to occasional in the coastal region between spring and fall migrations; unknown to have wintered. Formerly very common, greatly reduced in the early 1900s, and now largely recovered.

Early reports to 1950. The first New Hampshire report is almost certainly that of Belknap (1792) who listed “Gray Curlew, *Scolopax totanus*.” The next records are those of Brewster (1925) at Lake Umbagog. He considered it a common spring and fall migrant there, his extreme dates (though perhaps not for New Hampshire) being 12 May to 19 June in spring and 27 August to 31 October in fall, though he had reports of birds being seen there by others in November. Though he never saw a flock of over 30 birds, he heard of “at least” 300 in New Hampshire at the outlet of the lake “a few days before” 12 Sep 1889, and several flocks totaling “upwards of 1,000 birds” on an unrecorded date in Nov 1879, after the lake had completely frozen over (Brewster 1925). This latter account seems fabulous or inexplicable today but he said it had precedent at the time. While he noted no decline in numbers at the lake 1871–1909, he reported that the species was nearly “banished” from the New England coast by the end of that period. He presumed that birds persecuted elsewhere sought localities such as Lake Umbagog where they were not bothered as much, thus keeping numbers at the lake about constant.

Dearborn (1898) considered it a “straggler” in Belknap and Merrimack Counties but later (1903) found it “in considerable numbers” in the coastal region in spring and fall. Howe (1901–1903) listed an early inland fall record

at Newfound Lake 17 Jul 1901. Allen (1903) called it a common seasonal migrant at the coast and “of occasional occurrence” inland, particularly in the Connecticut River valley. Wright (1911) considered it a “not uncommon fall and spring migrant” in the Jefferson region, having a count of up to 8 birds at Cherry Pond 4 Oct 1906. Marble (1927) had but 1 record for Franconia Notch: 1 on 22 Sep 1911. White (1924b, 1937) found it “rather uncommon” in the Concord area, extreme dates there being from 29 Apr (1932) to 4 Jun (1929) in spring and 3 fall reports from 29 Sep (1935) until 13 Oct (1936). Reports submitted to RNEB in 1936–1949 show this species to have been a regular spring migrant in the coastal region from early April to late May and in fall from mid-July to early December. Inland during the same period it was recorded from early to late May and in fall from mid-September to mid-November.

At the Isles of Shoals, this species only seems to have been recorded in fall prior to 1950, though it doubtless also occurred there in spring. The earliest known fall record is 15 Jul 1938, as reported by Jackson (1947); the latest is 1 at Smuttynose Island, ME, 9 Oct 1954 as reported by Libby (1955). Highest known count for the Shoals is “about twenty-five” seen flying south over Smuttynose 20 Aug 1936, as noted by Wright (1937a) who also considered it a “common migrant” there.

In summary, the available data suggest that this shorebird was very common from the colonial period until about the 1890s when market hunting began to take a serious toll. Forbush (1925) states that its numbers declined greatly in New England generally 1905–1925, a trend surely reflected in New Hampshire. After the passage of protective laws, its numbers appear to have grown steadily through the 1940s.

1950 to present. Numbers reported suggest a further increase, especially since 1960.

Northbound migration. Earliest known arrivals are 1 on 21 Mar 2006 at Hampton (J. O’Shaughnessy), 1 on 24 Mar in 1991 inland at Hopkinton (T. Richards), and in 2008 at Newmarket (P. Brown); mean arrival date is 9 April. Peak migration period is the last 2 weeks of April and the first 2 weeks of May. Peak coastal count in this period is 56 at Straham 26 Apr 2002 (S.R. Mirick), counts over 15 being unusual. Migration is thought to be over by the first week of June, the latest presumed coastal migrants being 10+ Hampton and Hampton Falls 19 Jun 1950 (T. Richards). Possible nonbreeding lingerers or very late migrants were 2 at Rye 25 Jun 1968 (R.W. Lawrence *et al.*); 1 inland at Lake Francis, Pittsburg, 26 Jun 1955 (M. Halberg); 1 at White and Seavey Islands 26 Jun 2000 (D. Hayward); 5 at the coast 29 Jun 1997, 3 at Hampton 28 Jun 2008, and 1 at Rye 30 Jun 2001 (all S.R. Mirick); and 3 at Hampton 30 Jun 2006 (T. Bronson).

Inland peak migration period is the same as at the coast;

peak inland count is 24 at Monroe 12 May 1999 (E.A. Emery *et al.*) and 24 at Gilford 15 May 2006 (D. Austin). Latest presumed inland migrant is 1 at Hancock 17 Jun 1979 (B.A. Hardin). During the exceptional fallout of shorebirds inland in 2004, 19 individuals were found 24–30 May in Keene, Sandwich, and Concord. A presumed nonbreeding lingerer was at Danbury 2–26 Jun 1951 (K.C. Elkins).

Southbound migration. Earliest coastal migrant may have been 1 at Hampton Falls 2 Jul 1995 (S.R. Mirick, N. Pease), but a very unusual flock of 100 at the coast 7 Jul 1961 (R.R. Rathbone *et al.*) certainly consisted primarily of migrants. One was at White and Seavey Islands 11 Jul 1999 (R. Cook). Peak fall coastal migration period is the last 2 weeks of September and the first 2 weeks of October, highest counts being 200 at Hampton 2 Sep 2006 (S.R. and J. Mirick), 192 on 9 Oct 1966 (L.G. and E.W. Phinney), and 175 on 11 Oct 1972 (J.E. Cavanagh), counts over 50 being unusual. A few regularly linger at the coast until early or mid-November, the latest known report there being 2 at Rye 25 Dec 2001 (R.A. Woodward).

Inland, earliest arrival or a previously undiscovered lingerer is 1 Jul 1979 (R.J. Bradley) at North Haverhill. Peak migration period inland is slightly later than at the coast. High inland fall count is 28 on 14 Oct 1961 (T. Richards) at Hancock and also 15 Oct 1970 (R.J. Bradley) at Littleton. Latest known report for the Connecticut River valley is 12 Nov 1998 (R.J. Bradley) at Littleton, and for the Saco River drainage is 17 Nov 1969 (T. Richards) at Ossipee. There are no known records for New Hampshire from 25 December through March 20.

Note on New Hampshire Willets

Taxonomists are increasingly coming to the view that the 2 allopatric morphs of Willet, Eastern *T. semipalmata* and Western *T. inornata*, should be considered separate biological species. They differ in habitat, morphology, voice (Douglas 1998), and ecology, although no DNA studies appear to have been completed (Lowther *et al.* 2001). Additionally, O’Brien *et al.* (2006) make a persuasive case for distinct migration patterns and wintering ranges for the 2 forms. They found that most adult Easterns leave North America by mid-July and most juveniles by early August. A few occasionally linger into early October; the bulk of the population apparently winters in eastern South America. O’Brien *et al.* (2006) suggest that nearly all overwintering Willets along the Atlantic and Gulf coasts, throughout the West Indies, and along most of the north coast of South America, are probably Westerns. This form frequently appears in New England by August and is the most likely form to be found here from September onwards. However, the historical records for New Hampshire seldom make a distinction between the 2

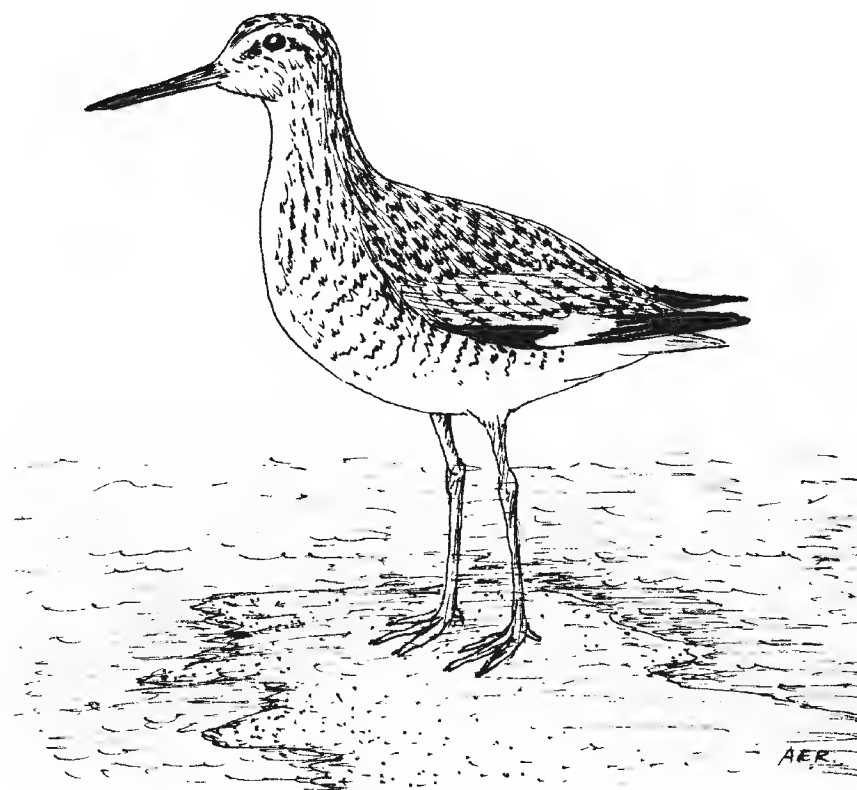
forms. More effort to do so should be made in the future. It is clear that spring and breeding records relate to Eastern Willet, but by August the picture is unclear. By late September, most birds in New Hampshire are probably Westerns, though few have been reported as such. Since the AOU has not officially split the 2 forms into separate species, only 1 species account is given here which, to some degree, is necessarily a mosaic of reports for both forms.

Willet *Tringa semipalmata / inornata*

Status. Regular transient at the coast in both spring and fall in small numbers; first proved breeding in 1985 and continues to do so in moderate numbers.

Early reports to 1950. Most authorities agree that this species nested all along the New England coast in pre-colonial times but was extirpated during the colonial period. In all likelihood it was a regular summer resident and possibly a breeder along the New Hampshire coast until about 1700. The first report for the state in the historical period may be that of Belknap (1792) who mentions the “Humility, *Tringa interpres?*” This vernacular name for the Willet was still in use over a century later but has also been used for other species as well, notably both species of yellowlegs. Brewster (1925) reported 1 shot by someone else at Lake Umbagog in about the 1870s but on a date already lost then. He never saw the specimen and it was not certainly taken in New Hampshire in any case. Thus the first published record of this species for the state is that of Dearborn (1903) who called it “a rather irregular migrant along the coast, generally seen in autumn, if at all.” The earliest known state specimens are 1 taken at Rye Beach 11 Aug 1871 by W. Brewster (MCZ #203884), another taken there 19 Aug 1882 by M. A. Frazar (MCZ #301870), 2 taken at South Seabrook 25 Jul 1906 by S. J. T. Eaton (MCZ #182389 and #182390), and 1 taken at Seabrook 26 Aug 1912 by C. R. Lamb (MCZ #330454). Interestingly, all 5 of the latter specimens were assigned by the collectors to the form *inornata*, not the local eastern form. This suggests that even by the late 1800s birds from the western population were appearing on the east coast by late July and early August and, in fall, may have even outnumbered birds of the eastern breeding population which had been decimated by hunting by that time.

Goodhue (1922) stated that he knew “of but three specimens taken in the state, all at or near Hampton,” but he provides no other details. It seems quite possible that both he and Dearborn (1903) had heard of the early specimens mentioned above. A bird was taken at Seabrook 26 Aug 1912 (BSNH #16701) by C. R. Lamb. L. R. Nelson collected a male at Rye Beach 21 Apr 1938, the earliest known spring record, and took both a male and a female there 1 Sep 1936. The latter 3 specimens were



formerly on display in the NHFG headquarters in Concord but were lost when that building burned down 21 Apr 1984 (Swanson 1984). Shelley (1933c, 1935a) reported 3 inland records: 1 at Westmoreland 8 Jul 1931, 1 in Walpole 14 Aug 1932, and 1 in Washington 14 Aug 1934. These records are the only known inland reports other than the 1 shot at Lake Umbagog, but the latter 2 suggest migrant Westerns.

While the Eastern Willet probably occurred sparingly in coastal New Hampshire on its seasonal migrations to and from known breeding areas in Nova Scotia from the 1920s through the 1940s, there are few published reports that probably relate to this form, the most probable form to be found in spring: 1 at Rye 17 May 1947 (N.L. Hatch) and 1 at Hampton Falls 30 May 1949 (T. Richards). Three at Seabrook 24 Aug 1947 (T. Richards) could have been either form.

1950 to present. An increase since 1960 and breeding confirmed. Population trend listed as uncertain by Hunt (2012). The breeding population is a species of special concern in New Hampshire.

Northbound migration. It is presumed that spring reports refer to the eastern breeding form *semipalmata*. There were only 15 records in 1950–1980, 3 of which were for the Isles of Shoals, but reports have been much more frequent since. The earliest known spring reports other than the 21 Apr 1938 record mentioned above are 2 at Seabrook 27 Apr 2008 (S.R. and J. Mirick), 5 at Rye 27 Apr 2010 (L. Medlock, D.J. Abbott), and reports on 28 April in both 2007 at Rye (S.R. Mirick) and 2009 at Hampton (S.R. and J. Mirick). Numerous reports of 5–10 birds in late May since 2000 (v.o.). Two were at Star Island 8 May 1966 (ASNH field trip), apparently the first

known record for the islands. Latest known migrants prior to the presence of breeding birds are 2 at Seabrook 31 May 1973 (J.E. Cavanagh). The other known spring reports for the Isles of Shoals are 2 at White and Seavey Islands 4 May 2006 (D. and M. Hayward), 1 at Star Island 25–26 May 1969 (O. Hewitt), 1 at White and Seavey Islands 25 May 2004 (M. Barney *et al.*), 1 at Star Island 27 May 1979 (E.W. Phinney), and 1 at White and Seavey Islands 29 May 2007 (D. Hayward *et al.*). Probable late migrants were there 13 Jun 2001 and 2 there 17 Jun 2004 (both D. Hayward *et al.*).

Summer and breeding. This species has been expanding its breeding range northward along the Atlantic Coast steadily since the 1960s, in essence recolonizing its pre-colonial range. New Hampshire breeding was first suspected in the early 1980s when a few territorial pairs were observed in the Hampton–Seabrook area. The first confirmed breeding was the discovery of a week-old chick at Seabrook 18 Jul 1985 (G.W. Gavutis, Jr.) and 2 weakly-flying young at Hampton 23 Jul 1985 (G.W. Gavutis, Jr.). The first actual nest was found in a loose colony of Common Terns at Hampton 21 Jun 1987 (G.W. Gavutis, Jr.). At least 4 pairs were present during some years 1981–1986 (Foss 1993), and the breeding population is believed to have been stable since about 1995 though may be increasing slightly. It breeds now only at the Hampton and Seabrook salt marshes (WAP 2005) but also possibly in Rye.

Southbound migration. High counts include 150 on 23 Jul 1997 (G. Mitchell) and 105 at Hampton Harbor 26 Jul 2008 (S.R. and J. Mirick), probably mostly if not all migrants. Peak migration period in the last 10 years has been the last week of July and the first week of August. Fall records for the Isles of Shoals are 1 on Star Island 28 Aug 1969 (E.W. Phinney), 1 at White and Seavey Islands 30 Jul 1998 and 5 Aug 2000, and 2 there 6 Aug 2006 (all D. Hayward *et al.*). Latest fall records are a Western form at Hampton Harbor 1 Oct 2005 (S.R. Mirick; photo) and a probable Western straggler at Hampton 2 Nov 1971 (E.W. Phinney). Other birds specified as Western Willets by the observer were 1 at Seabrook 8 Sep 1950 and 20 Sep 1950 (both T. Richards) and 1 at Hampton 9 Aug 2008 (S.R. and J. Mirick).

Lesser Yellowlegs *Tringa flavipes*

Status. Regular northbound and southbound migrant at the coast, more common in fall than in spring. Regular inland in small numbers during both seasons. Greatly reduced from about 1830 to about 1915, and largely recovered by the 1960s, after which reported numbers have declined.

Early reports to 1950. The first certain reports for the state are those of Brewster (1925) who found it a “com-

mon transient” at Lake Umbagog in summer and fall. His extreme dates there, possibly not all for New Hampshire localities, were 20 July to 2 October, his highest count being just over 100 near Leonard’s Pond 6 Sep 1896. He noted little decline in general numbers there in 1871–1909.

Allen (1903) considered it an “uncommon spring and common fall migrant on the coast [and] rather rare inland...” Dearborn (1898) had but 1 record for Belknap and Merrimack Counties: 1 at Alton 20 Aug 1889. At the coast, Dearborn (1903) called it a “common migrant in August and September” but gave no spring records. Wright (1911) considered it an “uncommon fall migrant” in the Jefferson region; he had 9 records from 8 August to 17 September in 1903–1910, mostly in late August.

Goodhue (1922) considered it only occasional inland. White (1924b, 1937) mentioned no change in its status in the Concord area, noting it as most often found in August and having only 1 record in spring: 1 on 1 May 1936. At the Isles of Shoals, there appear to be no spring records and the earliest in fall is 1 at Appledore Island, ME, 8 Jul 1936, reported by Wright (1937a). He also noted that the species is a common migrant at the Shoals in fall but rarely alights. There appear not to be any additional published reports for the Isles of Shoals since. In 1936–1949, only 4 reports were submitted to RNEB, all in 1947–1949 and all from inland localities: 2 at New Hampton 21 Sep 1947 (T. Richards), 5 at Hancock 17 Aug 1948 (R. Perkins), 1 at New Hampton 9 Sep 1948 (V.H. Hebert), and 1 at Newfound Lake 20 Sep 1949 (T. Richards).

Forbush (1912) noted that many were being shot for the market as early as 1813, that the species began to be uncommon in the northeast by about 1890, and that it had become rare by 1912. From this low point it appears to have partially recovered in New Hampshire by the 1920s and had become moderately common again by the 1930s. Despite the opinion of Brewster (1925) given above for Lake Umbagog, it seems certain that the Lesser Yellowlegs declined sharply in New England in general and therefore probably in southern and coastal New Hampshire from about 1830 until about 1915.

1950 to present. Continued increase 1950s and the 1960s, since when reported numbers have declined.

Northbound migration. Earliest known coastal arrival is 1 at Rye 30 Mar 1977 (R.W. Lawrence *et al.*), the next earliest being 1 at Exeter 3 Apr 1954 (D.W. Finch). Mean statewide arrival date is 4 May. Peak migration period is the first 2 weeks of May, high coastal counts being 15 on 8 May 1977 (R.W. Lawrence *et al.*) and 16 at Stratham 16 Jun 1995 (S. Drew). Reports of nonbreeding lingerers, very late migrants, or even very early southbound birds include 1 at Hampton 25 Jun 2000 and 2005 (both S.R. Mirick), 4 there 30 Jun 2001 (D.J. Abbott *et al.*), and 1 at

White and Seavey Islands 29 Jun 2006 (D. and M. Hayward).

Inland, the earliest known records are 1 at Keene 6 Apr 2008 (E.A. Masterson) and 1 far north at Stewartstown 12 Apr 2000 (D. and B. Killam). Highest known inland spring count is 7 at Concord 10 May 1973 (H.M. Martin *et al.*); 16 birds were reported inland in spring 2007 (v.o.), not including 12 at Exeter 2 May 2007 (T. Bronson), whereas usual numbers range 2–5 at that season. Latest inland spring records are 3 times on 23 May (1967, 1970, 2004), and on 27 May 2006 at Keene (L. Tanino).

Southbound migration. Earliest arrivals could be 15 at Hampton 1 Jul 1968 (L.G. Phinney), 3 at White and Seavey Islands 2 Jul 2004 (M. Barney *et al.*); peak coastal migration period is the last week of July and the first 3 weeks of August. High coastal counts in this period were 200 on 30 Jul 1961 (K.C. Elkins *et al.*) and 150 on 10 Aug 1969 (H.C. Anderson, R.W. Smart), possibly including both adults and some juveniles. Peak of probable juveniles is the last 2 weeks of August. Latest coastal fall records are at Exeter 8 Nov 2003 (J. Williams, B. Taffe) and at Rye 20 Nov 1969 (R.W. Lawrence). Stragglers at Seabrook 19 Dec 1981 (CBC) and 15 Dec 2001 (CBC) are the only known records for December.

Early arrival and peak migration period average about a week later inland than at the coast in fall. Earliest known inland arrival is 1 at Whitefield 11 Jul 1980 (R.A. Quinn), and peak inland count is 47 at Dublin 28 Aug 1963 (T. Richards). Latest record for the Connecticut River valley and for north of the White Mountains is 15 at Pittsburg 20 Oct 1967 (F.T. Scott) and latest for the Merrimack River valley is 2 at Hopkinton 24 Oct 1964 (M.N. Dodge *et al.*).

Upland Sandpiper *Bartramia longicauda*

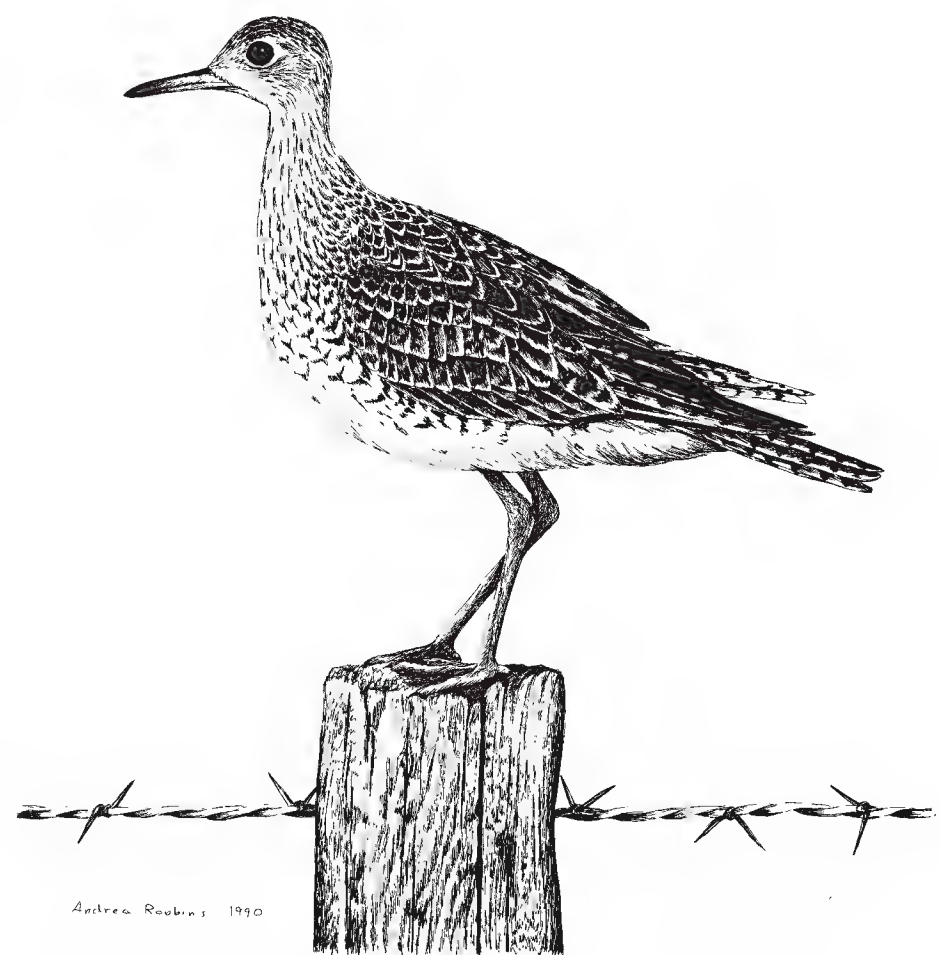
Status. Uncommon to rare spring migrant and only irregular to occasional in fall. Ten to 12 pairs usually breed at Pease International Tradeport in Newington, the only remaining breeding site in the state. Formerly a common migrant and breeder but greatly reduced 1880–1920 and has not recovered. Now considered an Endangered species in New Hampshire.

Early reports to 1950. A bird of open fields and grasslands, this species was probably not common in precolonial or early colonial times. It was listed by Belknap (1812) as “Upland Plover, *Charadrius tetradactylus*.” As suggested by Richards (1954) and Silver (1957), it probably invaded New Hampshire from the south and west as forests were cleared and probably reached its greatest abundance in the state between 1870 and 1890 when the acreage under agriculture peaked and before the market-hunting era. It may not have arrived until the 1880s (Foss 1994, WAP 2005). At that time it was a common to abun-

dant migrant and locally common in breeding season in central and southern New Hampshire (De Luca 2007).

Goodhue (1877a) called it a “common summer resident” that bred in the Webster area. Later he said that in the 1880s nearly every field in the Merrimack River valley had 1 or more nesting pairs (1922–notes to 1930). They “usually came in spring sometimes as early as the 24th of April but usually not before the first week of May,” and eggs were usually laid by May 25. “The fall migration began in the last week of August and after September they were rarely seen... Since 1890 the Upland [Sandpiper] has become more and more scarce until by 1905 they practically ceased to nest in this part of the state (*i.e.* Webster). After that time the decrease became so rapid that only a single bird or so was noted each year during the migrations. In 1914 none were seen or heard... Since then I have noted but one bird, that on May 5, 1916. None have been seen or heard since then,” though he did record presumed migrants at Boscawen 15 Aug 1922 and 18 May 1923.

This pattern is confirmed by other writers such as Allen (1903) and Thayer (1914) who thought it had greatly declined in the Keene area from about 1885 to 1914. Dearborn (1898, 1903) still called it “common” along the interior river valleys, though probably on the basis of slightly outdated information. It was rare north of the White Mountains, as Wright (1911) only had records of 1 southbound migrant at Crawford Notch on 19 Aug 1909 (N.C. Brown) and of a pair probably breeding in Lancaster in 1895 (*fide* F.B. Spaulding). This pair was present from May until Sep, and if it did breed constitutes the northernmost known breeding record for the state.



Maynard's (1871) statement that it was "common" in Coos County could only have applied to the southwestern-most part in the Connecticut River valley because Brewster (1925) never found it in the entire Lake Umbagog region 1871–1909.

From 1900 to 1950, the number of breeding localities reported was relatively low. Allen (1903) listed Alstead (*fide* R. Hoffmann) and northwestern Cheshire County (*fide* G.H. Thayer) as well as a specimen from New London 13 Jul 1891 (W.H. Phelps). Dearborn (1905) gave it as still nesting at Northfield, but Thayer (1912) said that it had stopped doing so at Dublin. Silver (1957) reports nesting near Lake Sunapee until 1910 (*fide* F.H. Allen), at Wolfeboro in 1918 (R.G. Carpenter 2nd), and at Hancock until 1920.

The Merrimack River valley from Lake Winnepesaukee south was the stronghold of this species in New Hampshire. White (1924b, 1937) records that it bred in the Concord region regularly at least until 1935, though it had ceased to nest in 1 or 2 localities where it formerly had before then, quite in contrast to Goodhue (1922) who found few after 1905 in nearby Webster. Four pairs were found nesting near Concord in 1933, and extreme early date known there was 20 Apr 1936 (White 1937). A bird was found at Manchester 5 May 1944 (Hopkins) where it was then considered a rarity. While it may have nested regularly in parts of the lower Connecticut River valley 1900–1950, with the exception of those reports given above there are no published data to document this. Eight reports submitted to RNEB 1938–1947 of birds present between 24 Apr 1938 and 21 Jun 1947 in spring and once in fall on 1 Sep 1945 were all from the Merrimack River valley.

The above accounts suggest that the Upland Sandpiper continued to decline as a breeding species from 1900 into the 1930s and 1940s, probably due to the loss of favorable habitat as much as disturbance or shooting; it also became rare as a migrant in this period.

1950 to present. Seldom reported from 1950 until 1956 since which year there has been an increase in reports. However, the future for the species in New Hampshire is questionable since there is only 1 breeding site left and due to deteriorating conditions on its wintering grounds. Population trend listed as decreasing by Hunt (2012).

Spring. Earliest known arrivals are 1 at Dover 4 Apr 2009 (C. DeStefano), 1 at Concord 11 Apr 1968 (H.F. Everett, N. Hollis), and 1 on 13 Apr 1980 at Hopkinton (T. Richards). Peak migration period is the first 2 weeks of May. Peak count in the coastal region is 22 at Newington 6 May 1991 (D.L. De Luca) and peak inland count known is 6 at Concord 28 Apr 1972 (H.F. Everett *et al.*). Other than at Pease International Tradeport and Great Bay National Wildlife Refuge, spring records have been concentrated in the Merrimack River valley, and the only records

from the White Mountains northward have been 2 at Littleton 11–15 May 1966 (R.J. Bradley *et al.*) and 1 in Randolph 9 May 1970 (V.H. Hebert). Latest known reports for suspected northbound migrants are 2 at Kensington 14 Jun 1974 (S.H. Perry *et al.*) and 1 at Londonderry 18 Jun 2006 (S. Brown), though the latter could have been a summer resident since this was an historic breeding site. The known spring records for the Isles of Shoals are 1 at Star Island 2 May 1971 (D.W. Finch, R.W. Smart *et al.*) and possibly the same bird there 4 and 11 May 1971 (D.J. Abbott, K.C. Elkins *et al.*). One at Pittsburg 28 Jun 1992 (D. Duxbury-Fox *et al.*) was unusual for both time and place.

Summer and breeding. Breeding since 1950 was not confirmed until 1979 but was suspected much earlier. A count of 6 was made at Manchester 25 Jun 1967 (L.G. and E.W. Phinney), possibly representing a pair with its young of the year, and 5 were found at the same place in the late summer of 1969 that may have been a family previously overlooked. A pair was found at the same place again in May 1971. A pair, possibly breeding, was found at Nashua in Jul 1967 (R.W. Lawrence *et al.*). A pair that was first found at Durham 6 May 1966 (A.C. Borrer) remained into Jun and was strongly suspected of breeding. Adults with 4 young were found at North Haverhill 12 and 23 Jun 1979 (H.M. Martin, A.E. Darling *et al.*) and a pair with 3 young was found at Manchester Airport 15 Jul 1979 (R.W. Lawrence *et al.*). In the *Atlas of Breeding Birds* for 1981–1986, breeding was confirmed at 1 site and considered probable at 6 others "at Pease Air Force Base and in large fields in Newington, Rochester, Dover and Haverhill" (Foss 1994).

In summer of 1990 surveys began at Pease International Tradeport which continued through 2009 with the exception of 2000 and 2001. The probable number of breeding pairs is shown in the table below, courtesy of D. L. De Luca. "Less intensive breeding season visits at Pease occurred from 1997 through 1999, 2002, and 2003...[but close monitoring began] through the breeding season in 2006 and 2007...[Regional] Breeding Bird Survey data indicate population declines since 1966. Steeper declines since 1980 coincide with the period of greatest decrease in the New Hampshire breeding population...Results of the 2006 and 2007 monitoring...show a marked increase in both the number of breeding pairs and the number of fledged chicks since 2002. The estimate of 12–16 breeding pairs and 20–25 fledged chicks equals the highest numbers recorded back in 1997" (De Luca 2007).

An unusual northern summer record was 1 bird at the Whitefield airport on 19 and 29 Jun 1997 (R.A. Quinn). Breeding distribution maps for 1965–1984 and for 1985–2004 are in WAP (2005).

Estimated minimum and maximum number of Upland Sandpiper pairs breeding at Pease International Tradeport, 1990-1999 and 2002-2009.

YEAR	Estimated # of pairs
1990	6–9 pairs
1991	7–10 pairs
1992	7–10 pairs
1993	9–12 pairs
1994	8–11 pairs
1995	8–12 pairs
1996	10–14 pairs
1997	12–16 pairs
1998	12–14 pairs
1999	12–14 pairs
2002	8–12 pairs
2003	8–12 pairs
2004	8–12 pairs
2005	6–10 pairs
2006	12–16 pairs
2007	10–14 pairs
2008	6–10 pairs
2009	8–12 pairs

Southbound migration. A possible early fall migrant or local breeder was 1 at Rochester 3 Jul 1967 (M. Weeks *et al.*). Peak fall migration period is the month of August. One was at Star Island 20 Aug 1981 (J. Ginaven). By the late 1980s, the only remaining staging area was at Pease International Tradeport where 60 were counted 3 Aug 1989 (L. Overtree, D. Geissler), 62 on 14 Aug 1992 (D.L. De Luca), and 74 on 7 Aug 1993 (A. Tappan). All these counts were taken within the airport, but high counts since 1995 taken from outside have been in the 10–15 range. Occasional reports come from the interior in the peak migration period such as 1 at Concord 27 Aug 2007 (E.A. Masterson). Reports after mid-September are uncommon and latest known is 1 on 6 Oct 1976 at Kensington (M.C. and S.H. Perry).

Eskimo Curlew *Numenius borealis*

Status. Believed extinct. Hypothetical. Probably a regular and occasionally common to abundant fall migrant at the coast and at the Isles of Shoals at least until 1850 and probably until the 1870s. Last reported in 1874.

Reports. There are only 2 specific reports for New Hampshire, neither of which is supported by an extant specimen. Not accepted here is Belknap's (1792) indefinite report of "Gray Curlew, *Scolopax totanus*," which Allen

(1903) thought possibly was this species. Townsend (1905) mentions seeing a "flock" at Rye in the fall of 1874. William Brewster apparently never found it at Rye Beach in his 4 visits there in late summer during 1868–1872.

Goodhue (1922) states that "Mr. S. A. Shaw has taken it some years since at Hampton. The fall migration used to begin about 20 August." If Shaw preserved any specimens in his extensive personal collection, they cannot now be found. The specimens in the Goodhue collection in the Science Center of New Hampshire in Ashland and at the Annie E. Woodman Institute, Dover, are of unknown origin. Goodhue's (1922) report may refer to birds taken by Shaw between 1903 and 1909 because neither Dearborn (1903) nor Allen (1903) apparently knew of any local reports of the species, and both were acquainted with Shaw. However, White (1922) did know of Shaw's record. While probably reliable, the second-hand nature of Goodhue's report of Shaw's specimen requires that the species be treated as hypothetical.

Remarks. It is quite possible that occasional Eskimo Curlews passed south along the New Hampshire coast as late as the first 2 decades of the 1900s since the last specimen records for MA and ME, respectively, were 1913 and 1929.

Brewster (1925) saw what he thought might be a bird of this species at Lake Umbagog just over the state line in ME 11 Sep 1880, but was unable to collect it, this being his only record for the lake. Forbush (1925) records that it was an abundant migrant in 1800 but that market hunting began to take a great toll 1870–1880, that it decreased very rapidly 1886–1892, and since then became very rare throughout its range. Thayer (1912) reports 2 collected by A. B. Thomas as close to New Hampshire as Newburyport, MA, 27 Aug 1908.

The main body of migrating birds of this species is now known to have passed southward well offshore of New Hampshire and much of ME, but large numbers were occasionally blown in by easterly storms. Griscom and Snyder (1955) record such flights in eastern MA in 1813, 1863, and 1883. Palmer (1949) also records such great flights probably caused by such weather in 1877, 1878, and 1879. Though it doubtless occurred, it was never recorded from the Isles of Shoals.

Whimbrel *Numenius hudsonicus*

Status. Casual transient in spring but a regular though uncommon fall migrant at the coast, noticeably increased since 1957. Two inland spring records and 8 inland fall records.

Early reports to 1950. The first probable New Hampshire record is that of Belknap (1792) who listed "Large Speckled Curlew, *Scolopax lapponica*," which may have been regular at that time. The first certain state reports are 1

taken at Hampton 3 Sep 1869 (MCZ #203740) and 1 taken at Rye Beach 2 Sep 1871 (MCZ #203739), both by William Brewster; and 1 shot at what is now called Leonard's Pond near the outlet of Lake Umbagog 18 Sep 1888 (MCZ #292743) as reported by Brewster (1925), the latter being the only record he had for the lake in 1871–1909. The only other known inland record is 1 given by Goodhue (1922) of a late straggler shot “in the Merrimack Valley near Boscawen” about “the last of October or first of November, 1890.” This specimen was in the J. W. Little collection at the time Goodhue wrote but cannot now be found. The first known spring record was of 6 birds flying north over the Isles of Shoals 15 May 1893 (Thaxter 1894). Goodhue (1922) considered the species “rare” at the coast, occurring the “last of May or the first of June” in spring and the “last of July to October” in fall. Dearborn (1903) listed this species as “irregular” at the coast in August and September, and Allen (1903) called it “uncommon,” having only records from Rye Beach by W. Brewster “in former years between August 6 and September 2,” presumably in the 1869–1872 period when Brewster is known to have visited there at that season. S. J. T. Eaton collected single birds at South Seabrook 27 Jul (MCZ #182291), 28 Aug (MCZ #182297), and 31 Aug, all in 1905. One was taken at Seabrook 24 Aug 1907 by C. R. Lamb (BSNH #16727), and another was collected at Seabrook about 20 Aug 1908 (MCZ #292739; collector unknown). White (1927) recorded 1 at Seabrook 27 Jul 1926. L. R. Nelson collected a female at Seabrook 1 Sep 1939 and a male there 22 Sep 1939, both of which were in the NHFG headquarters in Concord until that building burned down 21 Apr 1984 (Swanson 1984). A flock of 6 were seen at the coast 21 Sep 1945 (V.H. Hebert *et al.*).

At the Isles of Shoals, in addition to Thaxter's (1894) report, Jackson (1947) states that “A few were seen [there] each year from 1928 to 1936, usually the latter part of August,” but he adds that the species “is becoming much less abundant and none was seen in 1937 or 1938.” Most of these records were probably made on the ME side of the state boundary. Wright (1937a) provides a record for Appledore Island, ME, on 20 Aug 1936.

The above data plus remarks of Griscom and Snyder (1955) for MA and of Palmer (1949) for ME suggest that this species was probably fairly common in New Hampshire, especially as a fall coastal migrant, from about 1800 until the heavy market hunting period in the 1870s and 1880s. By 1900 it was uncommon to rare, but its numbers appear to have built up again by the early 1930s, may have tapered off somewhat by the early 1940s, and then began to increase again.

1950 to present. Noticeable increase in reports during this period, especially since 1957.

Northbound migration. Rare; in 1950–1980 a total of 12

birds were reported between 13 Apr 1966 (R.W. Lawrence, L.G. and E.W. Phinney) and 27 May 1973 (K.C. Elkins); since then reports have been slightly more frequent. Peak migration period is the middle 2 weeks of May, and peak spring count is 5 on 21 May 1972 (K.C. Elkins *et al.*). At White and Seavey Islands, 1 was early on 29 Apr 2000 (D. Hayward, M. Charette) and late stragglers or exceptionally early southbound birds were 1 there 22 Jun 1997 (R.W. Suomala *et al.*) and 7 there 26 Jun 2001 (D. Hayward *et al.*). The only known inland records are 1 at Keene 26 May 2004 (J. Smith) during an exceptional spring fallout of shorebirds and a presumed late migrant at First Connecticut Lake, Pittsburg, 15 Jun 2008 (E.B. Nielsen, S. Sweet; photo).

Southbound migration. Earliest probable transients are 1 on White and Seavey Islands 2 Jul 1998 and again on 2 Jul 2002 (D. Hayward *et al.*), and on the mainland 1 inland at Squam Lake 9 Jul 2009 (R.S. Ridgely) and 3 at Hampton 9 Jul 2005 (E.A. Masterson). High July count is 27 flying south off the Isles of Shoals 9 Jul 2009 (P.D. Hunt). Peak migration period is the last 2 weeks of July and the first 2 weeks of August. Peak count in this period is a remarkable 106 birds between Hampton, Seabrook, and Rye on 10 Aug 1976 (D.J. Abbott). Next highest known counts are 53 at White and Seavey Islands 25 Jul 2001 (D. Hayward *et al.*) and 49 counted migrating southbound along the coast 1 Aug 2004 (S.R. Mirick, J. Lawrence). Counts over 10 are unusual and there were no known counts over 8 until 1960. Extreme dates for the Isles of Shoals are 6 at White and Seavey Islands 11 Jul 2000 (D. Hayward) and 1 there 20 Sep 1998 (R.W. Suomala *et al.*), peak count in 2001 as noted above. One was flying south at Jeffreys Ledge 25 Jul 2008 (E.A. Masterson). Latest known fall record is 1 at Rye 24 Oct 1976 (A.C. Borrer *et al.*).

Six southbound inland reports: 1 at Squam Lake 9 Jul 2009 (R.S. Ridgely); 1 found “catching grasshoppers and eating blueberries” at the summit of Pack Monadnock at 2290 feet elevation 17 Aug 2008 (G. Coffey); 1 on the alpine tundra of Monroe Flats near the summit of Mt. Washington 8 Sep 1984, the elevation record at about 6200 feet (*fide* T. Richards); 1 at Pittsburg 8 Sep 1987 (A. Kribstock); 1 at Lake Umbagog 6 Aug 1989 (S.B. and M. Turner); and 1 at Auburn 5 Sep 2000 (I.C. MacLeod; photo). Other records that could arguably be considered inland are 1 at Durham 26 Aug 1998 (S.R. Mirick) and 1 at Newmarket 23 Sep 1996 (S.R. Mirick).

Taxonomic note. Several authorities agree that there are at least 3 species of Whimbrel worldwide (e.g., IOU) and that the North American *N. hudsonicus* should be separated taxonomically from the Eurasian Whimbrel *N. phaeopus* (which is a possible vagrant to New Hampshire from Europe, having occurred several times in MA). We follow this treatment here.

Long-billed Curlew *Numenius americanus*

Status. Hypothetical. Regular and occasionally common on the MA coast in the late 1880s (Veit and Petersen 1993) and thus possibly regular in New Hampshire for some of the 1800s but not reported for the state since 1872.

Reports. Dearborn (1903) related that it was “seldom seen” at the coast and that he found single specimens in the collections “owned by Mr. [Joseph] Turner of Portsmouth and...by Mr. George Wentworth of Rollinsford.” However, these specimens cannot be found today and there is nothing to indicate that they might not have been taken along the nearby coast of York County, ME, a large part of which is included within the purview of Dearborn’s paper. Allen (1903) called it “A rare fall migrant until recent years; now accidental. Mr. William Brewster observed single birds at Rye Beach on August 25, 1871 [and] August 12 and 17, 1872.” If a specimen was taken at any of these latter times, it cannot now be found. While the present writers do not doubt these records, there is no indication that more than 1 experienced observer was present.

Goodhue (1922) merely described it as “very rare” but gave no further details. Allan (1931) lists 1 seen at the Isles of Shoals 5 Oct 1929, but does not say in which state and provides no other details.

This species appears to have been a regular fall migrant along the short New Hampshire coast, perhaps occasionally in numbers, until about 1850 and possibly a little later. This is suggested by a review of the following authors, none of whom, unfortunately, gives any specific New Hampshire records: Coues (1868), Purdie (1877), Stearns (1887), Osgood (1890–1891), Townsend (1905, 1920), Forbush (1925), Palmer (1949), and Griscom and Snyder (1955). Palmer (1949) accepted 4 records for ME: 2 in 1866, 1 in 1869, and 1 in 1939. About 10 MA records since 1900 (Veit and Petersen 1993, BO database 2010). The species’ decline was surely due to excessive hunting.

Hudsonian Godwit *Limosa haemastica*

Status. Regular but uncommon fall migrant at the coast, noticeably increased since 1960. Two spring records. Unreported at the Isles of Shoals.

Early reports to 1950. As for the previous species, it was apparently regular but sometimes common in fall along the coasts of ME, MA, and, presumably, New Hampshire in precolonial and early colonial times to about 1800. The same easterly storms that brought numbers of Eskimo Curlews and American Golden-Plovers to the New England coast often brought numbers of this species as well. It was greatly reduced from prior times by 1900 but has been increasing steadily since about 1935, though whether this trend was reflected in New Hampshire is not

certainly known due to a lack of reports in this period.

The first known records for the state are 1 taken at Rye Beach 24 Aug 1881 by an unknown collector (MCZ #271672) and 1 taken at North Hampton 15 Oct 1901 (*fide* S.A. Shaw) as reported by Goodhue (1922). This is very likely the record referred to without details by Dearborn (1903) and Allen (1903). Three were collected at Seabrook by S. J. T. Eaton in 1905: on 6 Sep (MCZ #182329), 28 Sep (MCZ #182330), and 29 Oct (MCZ #182331). One was collected at Seabrook 2 Aug 1906 (MOS #X01-683) by M. B. Felch. L. R. Nelson collected a female at Seabrook 29 Sep 1936 and a male there 5 Oct 1936; both mounts were in the NHFG headquarters in Concord until the building burned down 21 Apr 1984 (Swanson 1984). The only report published in RNEB in 1936–1949 was 1 at Seabrook 20 Sep 1947 (H. Coolidge *et al.*).

1950 to present. Significant increase in this period, becoming almost annual in fall.

Northbound migration. One at Hampton Falls 24 May 1964 (V.H. and R.C. Hebert) and 1 at Rye on 23 May 1980 (E.W. Phinney) are the only known spring reports.

Southbound migration. Earliest arrival is an exceptional 11 at Rye 14 Jul 1982 (S.A. Fogleman), otherwise is 2 at Seabrook 18 Jul 1998 (A. and B. Delorey) and 1 there 22 Jul 1995 (P.D. Hunt). Typical peak migration period is the last 3 weeks of August. The next highest recorded counts in this period were at Seabrook and are 7 on 14 Aug 1993 (S.R. Mirick, P. Mueller), 6 on 25 Aug 1957 (K.C. Elkins) and 6 on 21 Aug 1966 (R.W. Smart), and 65 passing Odiorne Point in Rye 12 Sep 2009 (S.R. Mirick). By far the highest count is a fallout of at least 109 at the coast during Hurricane Irene 28 Aug 2011 (S.R. and J. Mirick, L. Medlock *et al.*). The increase since 1950 is illustrated by the fact that 16 individuals were recorded 1950–1960, 37 in 1961–1970, 29 in 1971–1980, 23 in 1981–1990, 85 in 1991–2000, and 64 in 2001–2009 excluding the high count of 65 in 2009. The only records with any claim to being inland are those of 2 at Exeter 19–23 Oct 1972 (J.E. Cavanagh *et al.*) and 1 at Hanover 2 and 3 Nov 1986 (W.G. Ellison, N. Martin). The first known record for Star Island is 1 there 21 Sep 1999 (R.W. Suomala *et al.*). The latest known fall records are 1 at Seabrook 12 Nov 1983 (D.W. Finch) and 1 at Rye 14 Nov 1972 (J.E. Cavanagh).

Marbled Godwit *Limosa fedoa*

Status. Rare visitor from the west. All reports but 1 at the coast and all but 4 in fall.

Early reports to 1950. Comments by Griscom and Snyder (1955) for MA and Palmer (1949) for ME suggest that this species must have been regular and even possibly common from time to time as a coastal migrant in New

England, almost entirely in fall. It appears to have been a common fall migrant in the early 1800s, but its numbers declined sharply due to hunting pressure by 1880 and remained very low until a slight increase began to be observed in coastal states adjacent to New Hampshire by the mid-1930s. However, such an increase and that of the subsequent 20 years went unrecorded in New Hampshire.

First state record was 1 shot at Rye Beach by a local hunter and shown to W. Brewster who identified it, but the specimen was not preserved. One collected 17 Aug 1912, by F. S. Hersey (MCZ #330436), is the only known state specimen.

1950 to present. An increase in reports; has occurred almost annually in fall.

Northbound migration. The only known spring records are 1 at Hampton Falls 30 May 1972 (J.E. Cavanagh), 2 at Rye 12 May 1975 (D.J. Abbott), and 1 at Seabrook 11 May 2009 (G. Tillman). A very surprising record of 2 first found in VT but then seen flying into New Hampshire airspace over the Connecticut River 30 May 2011 (D. and S. Hardy, G. Clark; photo).

Southbound migration. Following Hurricane Carol in late Aug 1954, at least 2 and possibly 4 were in the Hampton–Seabrook area: 1 on 30 Aug, 2 on 4 Sep, and 1 on 12 Sep (T. and B.D. Richards, P. Keenan). No other reports until 1969. Since then at least 40 records, annually since 2003, on the mainland coast between extreme dates of 1 at Seabrook 7 Jul 2000 (A. and B. Delorey) to 1 at Hampton 21 Sep 2008 (S.R. Mirick *et al.*), most frequently in the last 2 weeks of August. Peak fall count is 5 at Seabrook 18 Aug 1982 (E.W. Phinney). One record for Star Island on 17 Sep 1977 (R.S. Holt).

Ruddy Turnstone *Arenaria interpres*

Status. Regular spring and fall migrant along the coast in modest numbers. Accidental inland in spring and occasional there in fall. Uncommon in winter.

Early reports to 1950. The first mention of this species for the state is that of Belknap (1812) who included the “Pyed Plover, *Charadrius apricarius*.” The next reports appear to be single birds collected by H. M. Spelman at Rye Beach 24 Aug 1880 (MCZ #271696) and 31 Aug 1880 (MCZ #271694). One was shot at the outlet of Lake Umbagog 2 Sep 1880 by George King as reported by Brewster (1925), who only had 2 other records for the Lake, both in ME. Dearborn (1903) considered it a regular spring and fall coastal migrant but “always comparatively few in number.” This may have been something of an overstatement because Allen (1903) had no records of his own at all. One was collected at South Seabrook on the midsummer date of 31 Jul 1906 by F. B. McKechnie (MCZ #316621). A possible nonbreeding straggler or very early

southbound migrant was found at Seabrook 27 Jun 1926 as reported by McGowan (1927). White (1932b) found it at Seabrook 3 times in the 26 May to 6 Jun 1931 period, including 27 on 2 Jun, the year not given. Reports published in RNEB in 1936–1949 show migrants present from 30 May to 8 June in spring and 21 July to 26 October in fall, with a high count of 10 on 7 Aug 1948 (T. Richards).

Allan (1931) reported 1 at the Isles of Shoals 24 Jul 1929, without specifying in which state. Wright (1937a) listed a straggler collected at the Isles of Shoals 2 Jul 1935 (C.F. Jackson) and recorded the first southbound arrivals on 26 July in both 1935 and 1936, the exact state not given but probably ME. Jackson (1947) said it was “[f]airly abundant during the period of migration” there in fall.

There seems to be little doubt that this species was a regular and increasingly frequent transient from 1900 through the 1940s.

1950 to present. Continues as a regular migrant in spring and fall, rare in winter. Increase in reports in this period. Numbers reported at the Isles of Shoals noticeably exceed those from the mainland, especially in fall.

Northbound migration. Earliest known arrival is 1 at the coast 22 Apr 1962 (R.W. Smart, V.H. Hebert *et al.*) and 12 at White and Seavey Islands 22 Apr 2002 (D. Hayward *et al.*), the next earliest being 1 at Seabrook 10 May 1972 (J.B. Grant). Peak migration period is the last 2 weeks of May, and highest counts are 30 on 20 May 1962 (V.H. Hebert, R.W. Smart *et al.*) and 40 at Seabrook 27 May 1973 (K.C. Elkins); counts over 15 are unusual. Latest known spring records are 7 at Rye 6 Jun 1998 (A. and B. Delorey) and 1 at Rye Ledge 14 Jun 1996 (D.J. Abbott). In the Isles of Shoals, earliest report is 22 April as given above and latest is 1 there 27 Jun 2003 (R.W. Suomala *et al.*) and 27 Jun 2005 (M. Barney *et al.*). The only known inland spring records are 2 at Hinsdale 10 Jun 1961 (T. and B.D. Richards) and 1 at Keene 26 May 2004 (J.P. Smith), the latter part of an exceptional fallout of shorebirds inland at that time.

Southbound migration. Earliest known arrival is 1 at White and Seavey Islands 10 Jul 1998 (R.A. Quinn) which built up to 45 there 30 Jul 1998 (J. Ellis, D. Hayward); usual arrival is by the last week in July. Peak migration period is the last 2 weeks of August and the first 2 weeks of September. Peak counts are 360 at White and Seavey Islands 4 Aug 2007, 592 there 7 Aug 2006 followed by 250 on 8 Aug and 175 on 18 Aug (all D. Hayward *et al.*), by far the highest counts ever recorded in the state, though counts over 45 are unusual. Taber (1955) stated that he “always found [it] present in moderate numbers” when he visited Star Island in late summer in 1950–1955. The latest fall coastal records are 1 at Hampton 9 Nov 1968 (L.G. and E.W. Phinney), 1 there 10 Nov 2010 (S.R. Mirick), and a straggler at Rye 24 Nov 1968 (E.W. Phinney).

By 2005 oversummering birds were routine at White and Seavey Islands mid-June through August.

Inland in fall there are records of 13 birds since 1950. Extreme inland dates are from 1 Aug 1971 (W.W. Kidder) at Charlestown until 15 Sep 1951 (E.H. Sherrard) at Hanover; the other inland reports are 1 at Lake Sunapee about 12 Aug 1951 (S. Moulton), 1 at Dublin 28 Aug 1963 (T. Richards), 1 at Exeter 10 Sep 1966 (K.C. Elkins), 1 at Berlin 2 Sep 1971 (T. Richards), 2 at Charlestown 4 Aug and 1 there 5 Aug 1965 (W.W. Kidder), 1 at Littleton 4 Aug 1992 (R.J. Bradley), 1 at Moultonborough 14 Aug 1999 (A. Groth), 1 at Madbury 30 Aug 1999 (S.R. Mirick), 1 at Rochester 12 Aug 2004 (S.R. Mirick), and 1 at Exeter 15 Aug 1993 (D.J. Abbott, S.R. Mirick).

Winter. Two mainland records: 1 at Rye Harbor 1 Jan 1955 (CBC) and 1 at Seabrook 11 Jan 1967 (L.G. Phinney *et al.*). At the Isles of Shoals, 3 seen on 16 Dec 1979 (E.W. Phinney *et al.*) and 5 seen 23 Dec 1978 (E.W. Phinney *et al.*).

Red Knot *Calidris canutus*

Status. Irregular spring and regular southbound migrant at the coast in small numbers, more numerous in fall. Three spring inland records, rare in spring at the Isles of Shoals, and unknown either as a summer straggler or in January through April. Major decline since the 1980s.

Early reports to 1950. The first state record is 1 collected at Rye Beach 19 Aug 1871 (MCZ #203829) by W. Brewster. H. M. Spelman collected 1 at Rye Beach 2 Sep 1880 (MCZ #271707) and 2 there 26 Aug 1881 (MCZ #271706 and #271708). The only possible inland report is that given by Brewster (1925) at Lake Umbagog, a bird supposedly shot by Monroe Wormell at a location and on a date already lost by 1880. Though Brewster stated that he was “personally inclined to put strong faith” in the report, it may not have been taken in New Hampshire in any case.

Dearborn (1903) considered it “of regular, and fairly common occurrence along the coast in spring and fall.” Allen (1903) did not even list it except to repeat Dearborn’s statement. S. J. T. Eaton collected 2 at Seabrook 28 Aug 1905 (MCZ #182477 and #182478). White (1927, 1929, 1932b) recorded 1 at Seabrook 27 Jul 1926 and 14 there 6 Jun 1931. N.L. Hatch found 7 at Seabrook 7 Jun 1947, the latest known record in spring; 1 was at North Hampton 29 Jul 1947 (S.A. Eliot, Jr.); and 1 was at Rye 27 Oct 1948 (V.H. Hebert).

While probably never abundant along the state’s short coastline, comments by Palmer (1949) for ME and by Griscom and Snyder (1955) for MA suggest that the species was common to abundant in those states prior to 1850 but declined over 80% between then and 1904 due to hunting pressure. Since then its numbers have in-

creased sharply, though its numbers have not returned to pre-1850 levels. It seems safe to assume that such trends were reflected in New Hampshire despite the lack of documentation.

1950 to present. A very slight increase in spring, but a major decline in fall since about 1980 as the eastern population is known to have dropped sharply, possibly as much as 80%. This drop is possibly related to the greatly increased Atlantic Horseshoe Crab *Limulus polyphemus* harvest in Delaware Bay.

Northbound migration. Earliest known arrival is 2 at Seabrook 13 May 1969 (*fide* V.H. Hebert). There were no spring reports 1950–1960, but it was found in 13 of the following 20 springs, suggesting a moderate increase. Has been recorded almost annually 1981–2009. Peak migration period is the last 2 weeks of May, and highest known count in this period is 22 at Seabrook 21 May 1972 (K.C. Elkins *et al.*), there being only 2 other counts over 10. Latest spring records are 1 at Seabrook 12 Jun 2004 (B. Griffith *et al.*), 2 at White and Seavey Islands 14 Jun 2001 (D. Hayward *et al.*), 1 at Rye 15 Jun 2003 (S.R. Mirick *et al.*), and 4 at White and Seavey Islands 16 Jun 2002 (D. Hayward *et al.*).

Very unusual inland reports are 1 at Franconia Notch 30 May 1986 (P. Zandi, P.A. Phipps) in a migrant flock of Short-billed Dowitchers, 1 at Leonard Marsh in Errol 19 May 1991 (L. Rowe, C.J. Martin) in a migrant flock of Semipalmated Sandpipers, and 5 at Keene 26 May 2004 (J. Smith), the latter in an exceptional spring fallout of shorebirds inland at that time.

Southbound migration. Earliest known arrival is 1 at Seabrook 15 Jul 1995 (A. and B. Delorey), and peak migration period is the last week of August and the first 3 weeks of September. Peak counts in this period are 200 on 9 Sep 1962 (K.C. Elkins *et al.*), and 110 at Seabrook 15 Sep 1956 (T. Richards) and at Hampton 1 Oct 1977 (A.C. Borrer *et al.*). There are very few other fall counts over 50 birds and none since 2000; usual counts are in the 2–5 range. Nearly all migrants have left by mid-November. There are only 3 December reports; latest of these by over a week is 1 at the coast 26 Dec 1966 (R.W. Lawrence *et al.*).

Sanderling *Calidris alba*

Status. Common spring and fall migrant at the coast and annual there in winter. Casual inland in spring and rare there in fall.

Early reports to 1950. The “Beach Bird, *Tringa arenaria*,” of Belknap (1792) certainly belongs here, the scientific name he used being still in general use at least until 1900. The next reports for the state are 4 taken at Rye Beach 8–15 Sep 1879, by H. M. Spelman (MCZ #271710–271712, #271714). Brewster (1925) found it “of infrequent but oc-

casionally abundant occurrence” at Lake Umbagog between extreme dates of 12 August to 18 September. Specific New Hampshire records he mentions are 2 on 17 Sep 1874, 8 on 9 Sep 1880, 1 on 18 Sep 1889 (MCZ #292313), and “at least one hundred” 16 Sep 1880 after a “heavy northeast rainstorm.” Forbush (1912) reports that it declined dramatically all along the eastern seaboard from 1835 to about 1900.

Dearborn (1903) called it “very common at Hampton and other beaches” in late August and early September. Allen (1903) called it a “common spring and fall migrant on the coast” and noted that it became “common” at Rye Beach after 2 August (*fide* W. Brewster). Marble (1909, 1927) found 1 at Saco Lake, Crawford Notch, 19 Aug 1910, during an easterly storm. White (1929) reported 1 at Seabrook 27 July of an unnamed year near 1929, and he (1932b) noted 8 at Seabrook 15 Jul 1931. Goellner and Provost (1936) reported 1 at Hampton Beach 2 Jan 1936, the first published winter record for the state. Reports were submitted to RNEB in 1936–1949 only for 1948 and 1949. Included were an unusual inland record of 1 at Errol 19 Aug 1948 (T. Richards), and winter records of 1 at Hampton 15 Dec 1948 (N.L. Hatch), 2 at Hampton Beach 29 Jan 1949 (A.M. Bagg *et al.*), and 10 at Hampton 23 Feb 1949 (N.L. Hatch *et al.*).

In summary, this species was apparently generally uncommon after the period of heavy market hunting of shorebirds that began in the 1870s and continued uncommon right up until the 1940s.

1950 to present. Numbers stable to significantly increased in this period, especially in fall and winter.

Northbound migration. Earliest known record of birds thought not to have wintered is 80 at the coast 13 Apr 2008 (S.R. and J. Mirick), and peak migration period is the last week of April and the first 3 weeks of May. Peak counts in this period are 150 at Hampton 27 Apr 2008 (S.R. and J. Mirick) and 175 at Hampton 2 May 2009 (S.R. and J. Mirick), there being few other counts over 75. Latest coastal migrants are 40 at Hampton Harbor 9 Jun 1954 (G.P. Baker) and 2 at Seabrook 24 Jun 1998 (S.R. Mirick). There are 2 inland spring records: probably of the same individual seen at Hinsdale 2 and 10 Jun 1961 (T. Richards).

Southbound migration. Much more numerous at this season than in spring. Earliest recorded coastal arrival is 2 at Rye 8 Jul 1967 (E.W. Phinney). Often numbers at least in the 1–30 range occur in July and August. Unusual numbers earlier in the summer are 250 on 8 Aug 1970 (R.W. Smart) and 250 at Rye 5 Aug 2000 (A. and B. Delorey), possibly representing adults whereas later maxima may pertain primarily to juveniles. Peak migration period is the last 2 weeks of September and the first 3 weeks of October. Highest reported fall counts are 400 at Seabrook 14 Oct 2000 (A. and B. Delorey), 485 at the

coast 13 Oct 1994 (A. and B. Delorey), 400 at Rye 28 Oct 1994 (D. Strong), and 500 at Hampton 31 Oct 2003 (A.J. Vazzano, R. Crowley). High late fall counts are 375 at Seabrook 25 Nov 2000 (S.R. Mirick) and 300 at Rye 9 Dec 1999 (S.R. Mirick). Most birds have gone by late November but numbers in the 25–65 range have occurred since 2000 into early December.

Inland in fall, there are 16 records 1950 to date, the great majority of which were in late August or early September and in the 2 major river valleys. Extreme fall inland dates have been from 1 at Monroe 1 Aug 2004 (S.B. and M. Turner) until 1 at Concord 17 Oct 1960 (M.N. Dodge). Highest inland fall counts since 1950 have been 6 at Bridgewater 16 Sep 1970 (T. Richards) and 7 at Littleton 4 Sep 1998 (R.J. Bradley), though these numbers are greatly overshadowed by Brewster’s 1880 report.

Winter. Mean annual numbers found on the statewide CBCs by decade have been 2 in the 1950s, 0.9 in the 1960s, 3 in the 1970s, 24.2 in the 1980s, 44.9 in the 1990s, and 118.4 in the 2000s, indicating an increase due in part to more and to more proficient observers. Since 1950 there has been a major increase in reports from mid-December into March and occasional birds thought to overwinter: selected reports are 16 at Hampton 9 Feb 1980 (K.C. Elkins), 20 at Seabrook 25 Feb 1978 (R.A. Quinn *et al.*), 56 at Rye 3 Feb 1995 (P.D. Hunt *et al.*), 72 there 26 Feb 1995 (S.R. Mirick *et al.*), and 300 there 22 Feb 1999 (L. and J. Beattie).

Semipalmated Sandpiper *Calidris pusilla*

Status. Regular coastal migrant, common in spring and common to abundant in southbound migration. Inland it is irregular in spring and regular in small numbers in fall.

Early reports to 1950. The “Ox-Eye, *Charadrius alexandrius*,” of Belknap (1792) was thought by Allen (1903) to apply to 1 of the small sandpipers such as this species. The first certain published records for the state are those of Brewster (1925) at Lake Umbagog who found it a regular fall migrant, sometimes “occurring abundantly.” His extreme dates for the lake were 20 July to 17 October, though he found it commonest by far in September, noting “scores, if not hundreds” on occasion near the outlet of the lake in the 1870s. However, he records that the numbers he found there steadily decreased from then to his last fall visit in 1905 until the largest flocks he found contained only 25–30 birds.

Dearborn (1903) called it “abundant during the latter half of August, and early in September at the beaches,” particularly at Hampton. Allen (1903) considered it a “very common spring and fall migrant coastwise, and also not uncommon in fall as a migrant” inland at such places as Lake Umbagog, Dublin Lake (*fide* G.H. Thayer),

and Ossipee Lake (*fide* E.A. Preble). Marble (1927) had a record for Saco Lake in Crawford Notch, 1 on 14 Aug 1907. Wright (1911) had 2 more records for the same general area: 2 at Jefferson 23–25 Aug 1909, and 1 at Saco Lake 3 Sep 1908.

White (1927, 1929, 1931b, 1932b) reported a few at Seabrook 27 Jul 1926; 1 or more present in both the last week of June and the first week of July of unstated years, “countless” numbers there 23 May 1930, “thousands” there on 2 and 6 Jun 1931, and about 1000 on 22 May 1932. White (1937) had only 1 inland record in the Concord area: 3 birds found 15 Oct 1936. Shelley (1935a) reported “several” at Washington in 14–18 Aug 1934. Reports submitted to RNEB in 1936–1949 include a spring inland record of 1 at Hanover 19 May 1940 (R.L. Weaver); 3 fall inland records of 1 at Andover 24 Aug 1939 (K.C. Elkins), 10 at Enfield 10 Sep 1939 (R.L. Weaver) and 1 at Newfound Lake 20 Sep 1949 (T. Richards); and spring counts of 2000 at Seabrook 30 May 1949 (T. Richards) and 44 there as late as 8 Jun 1948 (T. Richards).

At the Isles of Shoals, Wright (1937) called it the “most abundant sandpiper during the latter part of July and the first part of August,” noting an early arrival at Lunging Island 15 Jul 1935. Jackson (1947) considered it an “erratic migrant” there, its number varying widely from year to year but usually commonest in August.

It seems likely that the decline due to hunting pressure noted by Brewster (1925) was reflected statewide from the 1870s until about 1910, but general numbers had recovered again by 1930 and continued stable through the 1940s.

1950 to present. Slight increase in this period, especially inland. Considered by some to be the most abundant sandpiper in the world (WAP 2005).

Northbound migration. Extreme early arrivals at the coast are 3 at Rye 11 Apr 1979 (E.W. Phinney) and 2 at Rye 12 Apr 1970 (L.G. Phinney, R.J. Lawrence *et al.*), the next earliest report not being until the first week of May. Mean arrival date is 17 May and peak migration period is the last 2 weeks of May. Peak spring coastal counts are 500 on 21 May 1961 (R.W. Smart, V.H. Hebert) and 397 at North Hampton 6 Jun 1970 (D.J. Abbott), there being no other known counts over 250. Fifteen seen at Star Island 30 May 1968 (ASNH field trip) constitute the first known spring record there, and latest in spring at White and Seavey Islands is 1 on 12 Jun 1999 (D. Hayward, D. Trested). Latest mainland spring record is 1 at Hampton 27 Jun 1998 (S.R. Mirick).

Inland, the earliest known spring records are 9 at Fremont 9 May 2007 (T. Bronson), 1 at Sandwich 14 May 2009 (A.J. Vazzano *et al.*), and 1 at Hinsdale 16 May 1965 (T. Richards). The species is irregular inland in spring

since 1960, having been found in only 10 springs 1960–1980 on 15 occasions, and not much more often since. Peak inland counts are 100 at Charlestown 28 May 2009 (E.A. Masterson), 32 at Hinsdale 10 Jun 1961 (T. Richards), and 25 at Errol 27 May 1991 (S.B. and M. Turner), there being no other inland spring counts over 5 birds. Latest known inland date is the 1961 record mentioned.

Southbound migration. Extreme early arrivals at the coast are 1 at Seabrook 4 Jul 2000 (M. Resch, D.B. Donsker) and 21 at Rye 6 Jul 1966 (R.W. Lawrence). Earliest at the Isles of Shoals was 1 at White and Seavey Islands 8 Jul 1998 (R.A. Quinn, J. Ellis). Peak migration period is the last week of July and the first 3 weeks of August. Highest coastal counts in this period are 5000 at Seabrook 8 Aug 1970 (R.W. Smart) and 4000 on 30 Jul 1961 (R.W. Smart, V.H. Hebert), there being no other known counts over 1500. Since 2000, peak counts have mostly been in the 200–400 range, exceptions being 1202 at Hampton 3 Aug 2008 (S.R. and J. Mirick) and 1300 at Seabrook as late as 10 Sep 2007 (S.R. Mirick). On 1 Aug 2004, a total of 7389 southbound small shorebirds were counted from Little Boar’s Head in 7 hours (S.R. and J. Mirick), most of which were thought to be this species and Semipalmated Plovers. There are few records after the second week of October, and latest known coastal record is 1 at Hampton 16 Nov 1990 (T. and B.D. Richards).

Inland, the earliest fall reports are 1 at Littleton 6 Jul 1998 (R.J. Bradley) and 1 at Jefferson 10 Jul 1997 (R.A. Quinn), and the highest count is 33 at New Hampton 14 Aug 1960 (R.W. Smart *et al.*), counts over 20 being exceptional and usually in the 1–6 range. Treating Exeter here as a coastal locality, where counts as high as 1500 have been recorded in August and 2 have been found as late as 23 Oct 1972 (*fide* V.H. Hebert), the latest true inland record since 1950 is 1 at Andover 18 Oct 1976 (K.C. Elkins).

Western Sandpiper *Calidris mauri*

Status. Uncommon to rare but probably regular fall migrant at the coast. Two spring coastal records and 3 inland reports in fall.

Early reports. The first report for the state is that of a female collected at Hampton by Dearborn 10 Oct 1899. He noted that it had previously been wounded and put it in his personal collection, but its present whereabouts are unknown. The only report submitted to RNEB in 1936–1949 is of 1 at Seabrook 24 Aug 1947 (T. Richards).

1950 to present. A regular fall transient in this period, having been found every fall since 1960, though only 3 times in 1951–1959. The species possibly increased somewhat but was probably overlooked.

Spring. Three records: 1 at Seabrook 14 May 1960 (R.W.

Smart, V.H. Hebert), 1 at Seabrook 1 Jun 1966 (L.G. and E.W. Phinney), and 1 at White and Seavey Islands 5 Jun 2005 (*fide* D.Haywood).

Fall. Extreme early arrival known is 1 at Hampton 17 Jul 1962 (V.H. Hebert), and peak migration period is the last 2 weeks of August and the first 2 weeks of September. Highest counts in this period are 20+ at the coast 26 Aug 1969 (R.W. Smart) and 15 there 31 Aug 2004 (J.P. Smith); there are no other single-day counts over 9. Latest coastal records are 2+ at Hampton 31 Oct 1954 (N.L. Hatch *et al.*), 1 at Seabrook 2 Nov 2002 (S.R. Mirick, J. Lawrence), and 1 at the coast 18 Dec 2004 (CBC).

Inland. The only true inland records are 1 at Hopkinton 2 Sep 1963 (H.B. Miller *et al.*), 1 at Rochester 19 Aug 2004 (S.R. Mirick), 1 there 2 Sep 2005 (A.J. Vazzano), 1 there 17 and 18 Aug 2009 (D. Hubbard, S. Young), and 1 at Rumney 9 Sep 2004 (G. Ports). Four reports for Exeter can doubtfully be considered inland records being tidal: 4 on 31 Aug 1966 (R.W. Smart), 1 on 12 Aug 1967 (R.W. Lawrence), 6 on 6 Sep 1969 (R.W. Smart *et al.*), and 1 on 22 and 24 Sep 1975 (D.J. Abbott).

Little Stint *Calidris minuta*

Status. Vagrant from Eurasia. One adult found at Rye 7–11 Aug 2003 (M.G. Harvey *et mult.*; photo). Photographs taken 10 Aug by P. Brown were published on the cover and p.17 of NHBR 22 (3) and in *Bird Observer* (31 [5]: inside front cover). Also see Harvey (2003) for discussion of regional context and age categories for records of this species. At least 6 records for MA (Veit and Petersen 1993, BO database 2010).

Least Sandpiper *Calidris minutilla*

Status. Common spring and fall migrant almost statewide but slightly more numerous in fall both inland and at the coast. There are no known winter records.

Early reports to 1950. Brewster (1925) considered it a “not uncommon transient visitor in late summer and early autumn” at Lake Umbagog 1871–1909 between extreme dates of 19 July to 2 October. Though he gives no specifically-dated New Hampshire records, he mentions seeing it at the outlet of the lake which is in that state. Dearborn (1898) found it a “regular” fall migrant in Belknap and Merrimack Counties 20 August to 1 September, occasionally in “considerable numbers.” Dearborn (1903) called it “abundant along the coast, and rather common inland,” especially in late August and “till well into September.”

Batchelder and Fogg (1899) record single birds at Manchester 3 and 10 Jun 1898, and 1 27 May 1889, the first of these reports being the latest inland spring record known. Howe (1901–1903) noted 11 at Newfound Lake

12 Aug 1902, and for a few days following. Allen (1903) considered it a “very common” coastal migrant and “to a less extent inland.” Wright (1911) had but 1 record, a bird at Jefferson 1 Jun 1903. White (1924b, 1937) also only had spring records for the Concord region: 5 on 17 May 1921, 9 on 24–25 May 1928, and at least 8 on 15–16 May 1929. White (1929) noted 1 at Seabrook 10 July of an unnamed year, probably near the time of writing, and collected 1 there 13 May 1930 (BSNH #19288). Richards (1965b) recorded a “sizeable flock” at Cherry Pond 27 May 1949, and 1 there 7 Sep 1949. Of 4 reports submitted to RNEB in 1936–1949, 3 were fall records in the Connecticut River valley and 1 was a spring report from the coast: 1 at Hanover 9 and 16 Aug 1943 (W.E. Lanyon), 2 at Monroe 28 Aug 1945 (R.B. Emery), 4 at Pittsburg 20 Aug 1947 (T. Richards), and 300 at Seabrook 16 May 1948 (T. Richards).

At the Isles of Shoals, Allan (1931) reported 1 on 1 Aug 1929 without indicating in which state. Wright (1937a) said that it was a regular though uncommon migrant at the Shoals, his 22 Jul 1935 and 9 and 24 Jul 1936 records all being for ME islands.

In summary, though its numbers were surely reduced in the market hunting period, it seems to have become reasonably common both inland and at the coast by the 1930s and into the late 1940s.

1950 to present. Available records indicate a modest increase.

Northbound migration. Earliest known coastal arrival is 7 on 9 Apr 1979 (E.W. Phinney) and next earliest is 26 Apr 1973 at Rye (J.E. Cavanagh). Mean first arrival date is 12 May, and peak migration period is the last 2 weeks of May. Highest spring coastal counts are 496 migrating at Seabrook 11 May 2009 (S.R. and J. Mirick) and 550 at Hampton 18 May 2009 (E.A. Masterson), counts over 100 being unusual.

Earliest known inland reports are 1 at Hopkinton 1 May 1979 (T. Richards) and 2 at Whitefield 7 May 2009 (R.J. Bradley), though in several years the first bird found in the spring has been inland rather than at the coast. Highest inland spring count is 120 at Concord 13 May 1996 (M. Suomala), inland counts over 60 being scarce. The earliest known spring report for the Isles of Shoals is 8 at White and Seavey Islands 9 May 2000 (D. Hayward, M. Charette), latest being 1 there 8 Jun 1999 (D. Hayward, D. Trested). During an exceptional fallout of shorebirds inland in 2004, 60 birds were found 24–26 May at 3 separate localities (v.o.), and in 2007 a total of 81 birds were reported inland in May (v.o.). Latest inland spring record since 1950 is a surprising 57 at Charlestown 3 Jun 1977 (V.H. Hebert), and latest probable migrants at the coast were 2 at Hampton 8 Jun 1969 (R.W. Smart).

Southbound migration. One at Hampton 25 Jun 2000

(S.R. Mirick), 4 at Star Island 26 Jun 1989 (T.H. Arter, L. Harper), and 4 at the coast 30 Jun 2001 (S.R. Mirick, D.J. Abbott) were the first coastal arrivals, next earliest being 13 at Newington 1 Jul 1998 (M. Suomala) and 8 at Hampton Falls 2 Jul 1995 (S.R. Mirick, N. Pease). Earliest arrivals inland are 1 at Newfields 25 Jun 2001 (S.R. Mirick), 1 at Dummer 1 Jul 1959 (T. Richards), and 2 at Littleton 6 Jul 1960 (R.J. Bradley). Peak migration period is the last week of July and the entire month of August, both inland and at the coast. Highest coastal count in this period is 250 on 24 Jul 1962 (V.H. Hebert *et al.*), counts exceeding 150 being scarce. Highest inland fall counts are 100 at Derry 17 Aug 1999 (A. Delorey) and 166 at Monroe 16 Aug 1999 (R.J. Bradley, E.A. Emery), the latter 2 records in a year when water levels in ponds and even major rivers were unusually low. Wastewater treatment plants often attract large numbers: 200 at Rochester 2 Aug 2004 (A.J. Vazzano *et al.*) and 180 at Exeter 16 Aug 2007 (E.A. Masterson), both of which could arguably be considered inland. Otherwise, inland counts over 35 are rare. Latest inland fall record is 1 at Windham 15 Oct 2002 (M. Harvey), and the latest known coastal reports are 2 at Hampton 8 Nov 2010 (S.R. Mirick *et al.*), possibly 1 of the same birds still there 11 Nov 2010 (S.R. Mirick), and 1 at Rye 24 Oct 2006 (S.R. Mirick).

Regular and likely common at the Isles of Shoals, recorded every year since 1999. Earliest known fall arrival is 34 at White and Seavey Islands 3 Jul 1999 (D. Hayward, D. Trested); significant counts are 30, 114, and 20 respectively at White and Seavey Islands 8–10 Jul 1998 and 143 there 18 Jul 1998 (all R.A. Quinn, J. Ellis); 14 at White and Seavey Islands 16 Aug 1997 (C.J. Martin, D.L. De Luca *et al.*); and 24 there 14 Aug 2000 (D.L. De Luca).

White-rumped Sandpiper *Calidris fuscicollis*

Status. Uncommon spring and relatively common southbound migrant at the coast. Casual inland in both spring and fall, slightly more frequent in fall. Rare in spring and fall at the Isles of Shoals.

Early reports to 1950. The first certain state records are 1 taken at Rye Beach 25 Aug 1871, by W. Brewster (MCZ #203882); 2 taken there in 1880 by an unknown collector, 1 on 4 Aug and 1 on 2 Sep (MCZ #271730 and #271729 respectively); and 1 taken there 25 Aug 1882, by C. R. Lamb (BSNH #15280). Allen (1903) relates that it was “not uncommon at Rye Beach in July and August” (*fide* W. Brewster), presumably in 1868–1872 when Brewster is known to have visited the coast during 4 summers. Merrill (1882) reports 1 at Lake Umbagog on 2 and 4 Oct 1876 but did not indicate in which state. Brewster (1925) found it to be a “not uncommon transient visitor” to Lake Umbagog in fall, his extreme dates there being 7 September to 26 October, though possibly not for New Hampshire localities. He gives no specific dates for the

state but mentions that he occasionally found it at the outlet of the lake which is in New Hampshire.

Dearborn (1903) called it an “abundant spring and fall migrant along the beaches” of the coastal region but was contradicted by Allen (1903) who called it “uncommon” there. Either one or the other was probably slightly wrong, but which one cannot be told today. S. J. T. Eaton collected 1 at South Seabrook 27 Sep 1905 (MCZ #182520). One was taken at Hampton 12 Oct 1925 (MOS #X01-698) by P. B. Olney. White (1929) reported 1 or more at Seabrook 27 May of an unstated year, presumably near the time of writing. L. R. Nelson collected a male and a female at Rye Beach 21 Oct 1940 which were in the mounted collection at NHFG headquarters until the building burned down 21 Apr 1984 (Swanson 1984). Reports submitted to the RNEB in 1936–1949 consist of 4 at the coast in spring 1947–1949 between 16 May and 4 June and once in September. Griscom and Snyder (1955) state that the species had increased noticeably in MA from the mid- to late 1800s until the time of writing, a trend probably reflected in New Hampshire, though direct evidence is lacking.

1950 to present. Slight increase in this period, especially of inland reports.

Northbound migration. Earliest coastal arrival is 1 at Rye 10 May 1968 (L.G. Phinney, R.W. Smart, K. Overman), and peak migration period is the last 2 weeks of May. Highest coastal counts are 15 at Hampton 30 May 1991 (P.D. Hunt, A. Leukering) and 12 there 4 Jun 1961 (ASNH field trip), there being no other spring coastal counts over 4. Latest known spring record is 1 at Hampton 16 Jun 1971 (J.E. Cavanagh). One at White and Seavey Islands 26 Jun 2000 (D. Hayward, M. Charette) was probably either a very late migrant or nonbreeding lingerer.

There have been 6 inland spring records since 1950, apparently the first ever reported. Five of them are from the Connecticut River watershed: 3 at Keene 24 May 1960 (T. Richards), 1 at Pittsburg 19 May 1962 (Strickland), 4 at Surry 26 May 2004 (J.P. Smith), 1 at Sandwich 24 May 2005 (R.S. Ridgely, A.J. Vazzano), and 3 at Hinsdale 6 Jun 2005 (J.P. Smith); 1 record in the Merrimack River watershed of 2 at Canterbury 2 Jun 2005 (T. Bronson).

Southbound migration. Earliest known coastal arrival is 1 at Hampton Falls 21 Jul 1990 (P.D. Hunt, J. Withgott), and earliest inland record is 1 at Charlestown 2 Aug 1965 (W.W. Kidder). Peak coastal migration period is the last 2 weeks of September and the first 3 weeks of October. Highest coastal counts are 75 at North Hampton 25 Oct 1965 (H.C. McDade) and 32 at Seabrook 18 Sep 2005 (S.R. Mirick), except for a very early 69 at White and Seavey Islands 20 Aug 2006 (D. and M. Hayward); there are no other known counts over 25 and usual numbers are in the 1–15 range. Latest coastal reports are 1 at

Seabrook 28 Nov 1966 (L.G. Phinney *et al.*), 1 there 27 Nov 1977 (C.A. Federer *et al.*), and 2 there 19 Dec 1981 (CBC).

Inland, highest known counts are 11 at Rochester 9 Sep 2011 (A.J. Vazzano, R.S. Ridgely), and 19 at Exeter 10–23 Oct 1972 (D.W. Finch) could arguably be considered inland. There have been only about a dozen inland fall records since 1950, most of which have been in October, the latest being 1 at Littleton 4 Nov 1972 (R.J. Bradley, M.L. Fuller) and 1 at Rochester 17 Nov 2000 (S.R. Mirick).

Baird's Sandpiper *Calidris bairdii*

Status. Variably common to uncommon migrant at the coast, only known in fall and in very small numbers; probably often overlooked. Casual inland. One record for the Isles of Shoals.

Early reports to 1950. The first state record is that of 2 birds collected at Rye Beach 26 Aug 1880 by H. M. Spelman (MCZ #271732 and #271731). The next records are those of Brewster (1925) at Lake Umbagog, the first known inland reports for the state. He suspected that 4 seen near the outlet of the lake 4 Sep 1894 were this species, and he collected 2 females at about the same place 12 Sep 1894 (MCZ #230683 and BSNH #15289). He also collected 2 others on the banks of the Androscoggin River near the lake 25 Sep 1894 (MCZ #292207–292208), collected 2 more about the same place 3 Sep 1896 (1 is BSNH #15286), and saw 1 more there 5 Sep 1896.

S. G. T. Eaton collected 1 at Seabrook 18 Aug 1907 (MCZ #182525), and F. S. Hersey collected 1 there 7 Aug 1909 (MCZ #292212). Dearborn (1903) only knew of Spelman's 1880 specimens. Allen (1903) also mentioned Spelman's records and, as pointed out by Griscom (1938), only repeated Brewster's Lake Umbagog records that actually were from ME. Bagg and Eliot (1937) also cited only Brewster's records for ME.

Blake and Blake (1907) report 1 collected at Newfound Lake, Hebron, 4 Sep 1906 and put in the Camp Pasquaney collection in Bridgewater, but its present whereabouts are unknown. Thayer (1912) reports finding 1 near Dublin in (late?) summer in 1912. This constitutes the entire known record for the species in New Hampshire before 1950.

1950 to present. Reported with increasing frequency in fall, especially since 1960 and now can probably be considered annual in small numbers though not always reported.

Spring. A late migrant at Smuttynose Island in the ME Isles of Shoals 8 Jun 1979 (A.C. Borrer) probably passed over the New Hampshire islands.

Southbound migration. Earliest known fall arrivals at the coast are 20 Jul 1967 (R.W. Smart) and 29 Jul 2000 (B. and A. Delorey). Earliest inland report is 1 at New Hampton 29 Jul 1961 (V.H. Hebert *et al.*). Peak migration period is the last 2 weeks of August and the first 2 weeks of September, and peak count statewide is 4 at Hampton 31 Aug 2004 (D. Mandell). The only known record for the Isles of Shoals is at least 1 and possibly 2 at Star Island 29 Aug 1954 (W. Taber, P.E. Keenan, K.C. Elkins *et al.*). There were records for 9 individuals inland 1950–1980 on 7 separate occasions from late August to mid-September. It has been reported almost annually 1980 to date and more regularly since 2000, as often inland as at the coast, but 11 of 13 birds found mid-August to mid-October in 2004 (v.o.) were at the coast. Latest known inland record is 1 at New Hampton 22 Sep 1977 (V.H. Hebert), only exceeded by 1 of Brewster's 1894 reports. Latest coastal record is 1 at Rye 17 Oct 2004 (C. Ciccone *et al.*). All fall birds have been juveniles except for an adult at Rye 28 and 29 Jul 2009 (M.G. Harvey, L. Kras) and an adult at Rye 15 Aug 2004 (S.R. Mirick, J. Lawrence, D.J. Abbott *et al.*; photo).

Pectoral Sandpiper *Calidris melanotos*

Status. Very uncommon spring and relatively common southbound migrant both inland and at the coast. Unreported at the New Hampshire Isles of Shoals.

Early reports to 1950. It seems likely, though not certain, that the “Marsh Bird, *Tringa morinella?*” reported by Belknap (1792) belongs here. Brewster (1925) considered it “usually common, sometimes abundant” as a southbound migrant at Lake Umbagog in 1871–1909. His extreme dates there were 21 July to 23 October, though not necessarily at New Hampshire localities. He recorded “fully one hundred” in the marshes at the outlet of the lake in New Hampshire on several occasions. Specific state records for there are 3 on 19 Sep 1889, 4 on 12 Sep 1894, and 17 on 1 Oct 1894. He noticed little or no decline in its numbers over the years he visited the lake in the fall.

Dearborn (1898) had 2 inland records: 1 at Alton 20 Aug 1889 and “about a dozen” at Squam Lake 10 Oct 1892. At the coast, Dearborn (1903) considered it a “common migrant” in fall. Allen (1903) called it “uncommon” inland and “common” coastwise in fall, mentioning no spring records either. Wright (1911) called it a “not uncommon fall migrant” in the Jefferson region. He had reports for 5 at Lancaster 5 Oct 1904, 1 collected there 8 Oct 1888 (F.B. Spaulding), and several other sight records by F. B. Spaulding for which the dates and localities were not saved.

Thayer (1912) noted 1 near Dublin in the summer of 1912, and Danforth (1919) recorded 2 at Jaffrey 19 Aug

1918. Rogers (1902–1919) found 1 at Cherry Pond 6 Sep 1919. White (1924b, 1937) considered it an “uncommon autumn transient” in the Concord region. He had records on 6, 10, and 29 Oct of unnamed years and noted “small flocks” in some seasons. Of 6 reports submitted to RNEB in 1936–1949, 1 was for 2 birds at Hanover 6 May 1940 (L. Forsyth *et al.*), 4 were inland records in fall between 21 September and 5 November, and 1 was of 2 at Hampton 6 Aug 1949 (V.H. Hebert). Two at Wentworth’s Location 15 Nov 1949 (T. Richards) were late.

As reported by Griscom and Snyder (1955) this species was a very rare spring migrant in MA in the late 1800s and was first recorded in Essex County in spring in 1912 but had increased markedly in spring by the 1950s. This pattern was probably also reflected in New Hampshire, but data to prove it are lacking.

1950 to present. Some increase in this period, especially as a spring migrant inland and at the coast.

Northbound migration. Earliest known coastal arrival is 2 at Greenland 19 Mar 1966 (R.W. Lawrence *et al.*), the next earliest being 1 at Rye 27 Mar 1976 (E.W. Phinney). Peak migration period is the last 3 weeks of April and the first week of May, peak count in this period being 13 at Rye 13 Apr 1968 (ASNH field trip); counts over 6 are unusual. Latest coastal spring record is 1 on 30 May 1963 (J.E. Cavanagh).

Inland, spring records are very uncommon. Earliest known arrival is 1 at Keene 28 Mar 1963 (T. Richards) and highest known inland count is 12 at Kensington 9 Apr 1977 (K.C. Elkins, D.J. Abbott), though counts over 6 are unusual. Latest inland spring record is 2 at Pittsburg 18 May 1964 (V.H. Hebert) unless 1 at Exeter 28 May 1952 (D.W. Finch *et al.*) is considered inland. The latter is the first published spring report for New Hampshire.

Southbound migration. Earliest known coastal arrival is 1 on 4 Jul 1961 (K.C. Elkins *et al.*), there being only 5 other records before the last week of July. Peak migration period is not until the last week of September and the first 3 weeks of October. Peak coastal counts in this period are 60 at Exeter 7 Oct 1999 (S.R. Mirick), 58 at Exeter 13 Oct 1972 (D.W. Finch), 39 at Hampton 5 Oct 1966 (L.G. and E.W. Phinney), and 35 at Exeter 23 Oct 1972 (D.W. Finch), though counts over 20 are rare. There are few coastal records in November, the latest by 8 days being 1 at Rye 25–29 Nov 1972 (J.E. Cavanagh). The only known fall record for the Isles of Shoals is 1 at Star Island 20 Oct 1974 (R.S. Aaronian).

Inland, extreme early arrival is 2 at Charlestown 18–21 Jul 1962 (W.W. and G.L. Kidder), and peak counts are 29 at Canterbury 24 Sep 1974 and 42 at New London 21 Sep 1974 (both K.C. Elkins); counts over 10 inland are rare. Latest record for north of the White Mountains since 1950 is 1 at Littleton 2–8 Nov 1998 (R.J. Bradley), and

latest known inland record is 7 at Manchester 9 Nov 1978 (C.L. Hamel).

Purple Sandpiper *Calidris maritima*

Status. Regular and common to abundant spring and late fall migrant and winter resident at the coast and on the Isles of Shoals; most common on the coast in spring. Four inland records and several recent summer records from the Isles of Shoals. Significantly increased since 1900 but a modest decline 1980–2000.

Early reports to 1950. Dearborn (1903) considered it “an uncommon migrant usually appearing late in the fall and early in spring.” He found 2 specimens in local collections, neither of which had data to assure they were not taken in ME. F. B. White collected 2 at Seabrook 27 May 1929 (BSNH #19282 and MCZ #330448), 1 there 20 May 1930 (MCZ #292173), and another there 17 Nov 1932 (MCZ #292174). White (1932b) recorded 12 at Seabrook 12 May 1931, and 1 still there the following 2 Jun. Shelley (1934e) described it for the first time as a “rather common spring migrant” at the coast and noted that L. R. Nelson had collected 1 there 1 May 1933.

At the Isles of Shoals, Allan (1931) recorded 1 on 11 Jan 1930, without indicating in which state. Wright (1937a, 1937b) recorded 1 taken at Appledore Island, ME, 15 Aug 1935, and a second with a broken wing caught alive on Lunging Island 14 Jul 1936 (MCZ #275734), the latter being the first known summer record for the state. Jackson (1947) called the species “extremely abundant [at the Shoals] during December, January and February” in 1928–1938. Reports submitted to RNEB in 1936–1949 show it to be regular at the mainland coast from 16 Nov 1946 to as late as 30 May 1949 when 45+ were still present (T. Richards); counts in the 100–200 range were recorded several times from late April to mid-May through the late 1940s.

Griscom and Snyder (1955) state that this species had “greatly increased” in MA since the late 1800s; this trend was probably also reflected in New Hampshire though detailed documentation is lacking.

1950 to present. A general increase occurred 1950–1980 after which there was a moderate decline to 2000 (Mittelhauser and Tudor 2003); 4 unequivocal inland fall records and 1 marginal one. Distribution discussed in detail by WAP (2005).

Fall. Four birds were found at Seabrook 18 Aug 1956 (H.C. McDade *et al.*) and singles were on White and Seavey Islands 2 Aug 2003 (M. Barney *et al.*), 7 Aug 2006 (D. and M. Hayward), and 17 Aug 2004 (R.W. Suomala *et al.*), which may have been summer stragglers. However, it seems equally likely that they may have been extreme early migrants because Palmer (1949) notes that

this species “occurs quite regularly in small numbers (up to ten seen together) from August 6 on” along the ME coast, chiefly on outer islands. Otherwise, the earliest known arrival on the mainland coast prior to the beginning of birds summering at the Isles of Shoals about 2000 is 1 there 1 Oct 1966 (ASNH field trip), and earliest known record for Star Island is 1 on 29 Oct 1970 (D.W. Finch). Peak fall migration period is the last 2 weeks of November and the first 3 weeks of December, the highest known counts in this period being 156 on the mainland coast 17 Dec 1977 (D.J. Abbott *et al.*) and about 600 at Star Island 18 Nov 1973 (D.W. Finch *et al.*).

Winter. Numbers present on the mainland coast and at the Isles of Shoals vary widely from year to year, and there is presumably some traffic between the 2 places by the same birds. Wintering numbers since 1950 have generally been in the 20–100 range on the mainland coast and in the 75–100 range at the Isles of Shoals, though there have been many exceptions to these ranges. For example, only 2–4 birds were reported to have wintered on the coast in the 1965–1966 season, and 400+ were at Star Island 4 Feb 1968 (ASNH field trip). Coastal CBC means were 31 for the 1990s and 31 for the 2000s. Mittelhauser and Tudor (2003) document a clear buildup of numbers along the coast and especially at the Isles of Shoals in December and January.

Spring. The first northbound migrants are suspected along the coast by early March, and peak migration period is typically the month of April, both at the mainland coast and at the New Hampshire Isles of Shoals. Highest coastal counts are 500+ on 2 Apr 1964 (T. Richards) and 327 as late as 2 May 1978 (D.J. Abbott), though counts over 200 are unusual. Extreme known dates for the New Hampshire Isles of Shoals are 10 at White and Seavey Islands 27 Apr 2001 (D. Hayward, A. LeFrancois) to 1 there 3 Jun 2000 and 11 Jun 2001 (D. Hayward *et al.*), peak count being 127 there 16 May 2001 (D. Hayward *et al.*). Latest known for the mainland coast are 4 at Hampton 2 Jun 1956 (K.C. Elkins) and stragglers at White and Seavey Islands 20 Jun 2002 (R.W. Suomala *et al.*) and 27 Jun 2003 (R.W. Suomala *et al.*). Mittelhauser and Tudor (2003) document a modest buildup of numbers both along the mainland coast and at the Isles of Shoals in April and May.

Summer. Ten reports of oversummering birds: 1 at White and Seavey Islands 2–20 Jul 2001 (A. LeFrancois *et al.*), 1 at White and Seavey Islands 3 Jul and 25 Jul 2002, 4 there 30 Jul 2002, 2 there 1 Aug 2002, 1 there 12 Aug 2002, 1 on 27 Jul 2003, 1 on 15 Aug 2005 (all D. Hayward *et al.*), 1 there 24 Jul 2005 (P. Brown), 1 there 29 Jun to 21 Jul 2006 (D. and M. Hayward *et al.*), and 1 there 5 Jul 2007 (S. and J. Burbidge).

Inland. The first unequivocal inland report is 1 at Andover 8–9 Nov 1972 (K. Thorsell, K.C. Elkins, L.C. Ris-

ing) seen as close as 12 feet feeding on a lawn at the Proctor Academy campus. One found at Exeter 22 Oct 1967 (L.G. and E.W. Phinney) has a marginal claim to be inland since it was found at a tidal location. One was photographed at close range 5 Nov 1977 at Stinson Lake, Rumney (G.N. Kent, A. Kent *et al.*); 2 were seen at Pleasant Lake, New London, also on 5 Nov 1977 (K.C. Elkins); and 3 were at Littleton 21 Nov 2010 (J. Cusik; photo).

Remarks. The comment by Silver (1957) that this species was reported from Lake Umbagog by Allen (1903) is in error.

Dunlin *Calidris alpina*

Status. Regular and common spring and fall migrant at the coast but much more numerous in fall than in spring. Casual inland in spring and occasional there in fall. A few usually winter on the coast; 2 records of summer stragglers. Greatly increased since 1900.

Early reports to 1950. The “Ox-Eye, *Tringa fulerica?*” of Belknap may belong here since that vernacular name was still in use for this species into the 1920s. But since this name was also used for other species, we cannot be sure which bird Belknap meant. The first dated records for the state are those of Brewster (1925) at Lake Umbagog. He considered it a “rather common transient visitor in autumn” there, though by his own admission his records were not numerous. His extreme dates for the entire lake were 27 September to 20 October, specific New Hampshire reports being 7 at Leonard Marsh 2 Oct 1893 and 5 near the outlet of the lake 27 Sep 1894.

Dearborn (1903) gave it as a common spring and fall migrant at the coast though he was only able to find 2 specimens in local collections. Allen (1903) had only fall records. White (1924b, 1937) had only 1 record for the Concord area, 1 collected by F. S. Moulton at East Concord 1 Oct of an unnamed year prior to 1924. W. Olney took 1 at Hampton 3 Oct 1925 (BSNH #16917), and F. B. White took 5 at Rye and Seabrook in the falls of 1928 and 1929 which are in the MCZ collection, the latest of which is of 1 taken 27 Nov 1928 (MCZ #292243). White (1932b) also reported 1 at Seabrook 21 Jul 1931, an unusual record of a summer straggler. At least 1 was found at Cherry Pond, Jefferson, 27 May 1949 (T. Richards), an unusual inland spring record. Reports submitted to RNEB in 1936–1949 include 1 at Seabrook 25 and 26 May 1938 (E.J. Goellner *et al.*). The rest all date from 1947–1949 in late May to 4 Jun 1947 at Seabrook (N.L. Hatch), in fall from mid-September to early November including 200 at Seabrook 6 Oct 1949 (T. Richards), and once in winter when 21 were at Hampton 23 Feb 1949 (N.L. Hatch *et al.*).

Like many shorebird species affected by market hunting in the late 1800s, New England Dunlin populations re-

covered slowly but steadily from about 1910 through the 1940s (Forbush 1912, 1925; Griscom and Snyder 1955), a trend probably also reflected in New Hampshire.

1950 to present. Reported numbers increased 1950–1960, after which they have been stable.

Spring. Since a variable number typically winters, extreme early migrants are not distinguishable with certainty, though the first migrants are suspected by early April: 7 at Newmarket 4 Apr 1997 (S.R. Mirick). Peak migration period is the last 2 weeks of April and the first 2 weeks of May, the highest counts in this period being 250 at Hampton 16 Apr 2006 (S.R. and J. Mirick, R.W. Suomala) and 225 at Hampton 1 May 2007 (S.R. Mirick), counts over 70 being unusual. Latest known spring record for a presumed migrant is 1 at Seabrook 10 Jun 1999 (S.R. Mirick); 1 straggler at Seabrook 19–25 Jun 1998 (S.R. Mirick).

Fourteen inland records of 1 to 4 birds since 1950 between extreme dates of 1 at New Hampton 10 May 1961 (V.H. Hebert) and 1 at Leonard Marsh, Errol, 27 May 1991 (S.B. and M. Turner), about evenly split between the Merrimack and Connecticut River watersheds. An unprecedented 600 were at Surry Mountain Lake 26 May 2004 (J.P. Smith) during an exceptional widespread fall-out of shorebirds inland at that time.

Fall. Earliest known coastal arrivals are 1 on 9 Aug 2009 (B. Griffith) and 16 Aug 1962 (T. Richards *et al.*), though it often does not appear until after 1 September. Peak fall coastal migration period is the last 2 weeks of October and the first 2 weeks of November. Highest counts in this period are 1000+ on 26 Oct 1961 (R.W. Smart, V.H. Hebert *et al.*), 1000 on 24 Oct 1964 (*fide* V.H. Hebert), and 1000 at Seabrook 9 Nov 2002 (S.R. Mirick), counts up to the 500 range having become occasional since 1950. Most coastal birds are gone by mid-December.

Inland there are 15 records since 1950, earliest being 1 at New London 21 Sep 1974 (K.C. Elkins) and latest being 1 at Pittsburg 10 Nov 1968 (D.J. Abbott). Peak inland fall count is 24 at Hinsdale 26 Oct 1962 (T. Richards), there being no other inland fall counts over 5 birds.

Winter. A few typically linger to late December, and the mean number found on coastal CBCs is 24 in the 1950–1972 period, 44.2 in the decade of the 1980s, 63.4 in the 1990s, and 88.3 in the 2000s. One was at the Isles of Shoals CBC on 16 Dec 2001 (*fide* M. McElroy). It has become regular at the coast January into March, numbers usually ranging between 2 and 50. High winter counts are 200 at Hampton 6 Jan 2007 (S.R. Mirick *et al.*), 120 at Seabrook 23 Jan 1993 (P.D. Hunt, I.J. Lovette), 130 at Hampton 9 Feb 2003 (S.R. Mirick, R.W. Suomala), and 200 at Seabrook 2 Mar 2001 (A. and B. Delorey).

Curlew Sandpiper *Calidris ferruginea*

Status. Vagrant from Eurasia. Two records accepted by NHRBC and 4 reports best considered hypothetical for lack of 3 experienced observers, a photograph, or specimen. The accepted reports are of a juvenile closely observed 9 Nov 1980 at Greenland for which a detailed description was placed on file (E.W. Phinney, R.W. Stephenson *et al.*) and 1 at Hampton 17–23 Sep 2011 (L. Medlock *et mult.*). The reports considered hypothetical here, which are probably correct, include the first known state report of 1 found at Hampton 9 Aug 1930 (*fide* J.T. Nichols) and reported by May (1930b), 1 at Seabrook 31 Oct 1953 (C. DeWindt), a breeding plumaged bird found at Rye 23 Jul 1961 (V.H. Hebert) and seen at a distance of 15 yards, and 1 seen at Seabrook 7 Sep 1994 (P.D. Hunt). The usual period of fall occurrence in New England is late July to early October. Two accepted records for VT (C.C. Rimmer pers. comm.), over 10 records for ME (P.D. Vickery pers. comm.), and annual in MA (Veit and Petersen 1993, BO database 2010).

Stilt Sandpiper *Calidris himantopus*

Status. Irregular fall migrant in small numbers at the coast, casual inland. Unrecorded at the Isles of Shoals.

Early reports to 1950. The first record for the state is that of 1 collected at Rye Beach by W. Brewster 20 Aug 1868. He shot “no less than ten specimens” there in Aug 1868 and 1869 combined and at least another 6 there in 1871. Specific dates available are 1 on 24 Aug 1869 (MCZ #203825), and in 1871: 1 on 31 Jul, 1 on 9 Aug, 2 on 11 Aug, 1 on 24 Aug, and 1 on 25 Aug. In addition, he collected 2 at Seabrook 11 Jul 1872 (MCZ #203823 and #292432) and 1 there 15 Jul 1874 (MCZ #330446).

One was taken at Rye Beach in the 9–11 period Sep 1879 (MCZ #271739) by N. Frothingham, and 1 was collected at the coast 18 Aug 1883 (MCZ #330445) by C. R. Lamb. M. A. Frazar took 2 at Newmarket 15 Sep 1889 (MCZ #301580 and #301589) and 1 there 15 Aug 1890 (MCZ #311945).

Dearborn (1903) said it appeared to be “a fairly regular but not very common migrant” at the coast and added that he found 1 in S. A. Shaw’s collection “that was taken at Hampton” on a date lost even then. Single birds were collected at Seabrook 5 Aug 1905 (MCZ #182574) and 15 Aug 1905 (MCZ #182575) by S. J. T. Eaton, and 1 at Seabrook 24 Sep 1905 (MCZ #292429) by C. W. Townsend. Two were taken at South Seabrook 28 Aug 1906 (MCZ #316639 and #316640) and another at the same place and on the same date (MCZ #182576) by T. Lank. C. W. Townsend collected 1 at Seabrook 20 Aug 1907 (MCZ #292430) and a second 3 days later (MCZ #255479), and S. J. T. Eaton took 1 there in the 15–20 period Jul 1909 (MCZ #182577). One was taken at Hamp-

ton 6 Sep 1926 (MOS #X01-704) by W. Olney.

Only 3 reports were published by RNEB in 1936–1949: 4 at Hampton 24 Aug 1947 (T. Richards), 2 at Hampton 2 Aug 1948 (T. Richards), and 1 at Rye Harbor 22 Aug 1949 (C. deWindt).

In summary, this species appears to have always been uncommon since the end of the market hunting era right through the 1930s and 1940s.

1950 to present. The number of birds reported grew slightly 1950–1980 and peaked 1967–1974, though the number of individuals varied widely from year to year. By the late 1990s and afterwards, the population in the eastern part of its breeding range appears to have declined significantly (Klima and Jehl 1998), a pattern reflected in a lower number of New Hampshire reports to some degree.

Fall. Earliest known arrival is 8 Jul 1976 (J.E. Cavanagh) at Rye. Peak migration period is the last week of July and the first 3 weeks of August. Peak counts in this period are 27 at Rye and 18 at Exeter in the 1–7 Aug period 1967 (D.W. Finch), 25 on 19 Aug 1969 (H.C. Anderson), and 16 on 8 Aug 1970 (R.W. Smart). Counts of 8 or more are now very unusual. At least 18 individual birds were reported in Aug and early Sep 1998, the first reports since 1993. Latest known coastal reports are 3 at Hampton 7 Nov 1984 (M.T. Martin), and 1 at Hampton 14 and 15 Nov 2008 (T. Bronson, S.R. and J. Mirick).

There have been over 50 birds reported from the Exeter wastewater treatment plant since 1950 but that is not considered an inland locality for this species. Unequivocal inland reports are 2 at Concord 30 Jul 1982 and 1 there 29 Sep 1982 (both T. Richards); 8 at the Rochester wastewater treatment plant 2 Sep 1998 (S.R. Mirick); 1 at Durham on the Rt. 155A fields 28 Sep–5 Oct 2008 (K. Dorsey *et al.*); 1 at Concord 3 Oct 1965 (B. Clarner, M.N. Dodge, N.B. Struckhoff); and 1 at Rochester 9 Oct 2007 (S.R. Mirick, D.J. Abbott, R. Ake).

Buff-breasted Sandpiper *Calidris subruficollis*

Status. Rare fall transient inland and in the coastal region in fall. Unrecorded in spring or at the Isles of Shoals.

Early reports to 1950. The first known record for New Hampshire is 1 collected at Rye Beach by W. Brewster 25 Aug 1871 and another shot there 3 days later 28 Aug 1871 (MCZ #292186). Dearborn (1903) called this species “one of the rarest that appears on our coast.” He found a specimen in the collection of Joseph Turner of Portsmouth but had no proof that it was not taken in ME. One was taken at Seabrook by C. R. Lamb 6 Sep 1909 (MCZ #255495). No New Hampshire reports are known from 1909 through 1956.

1950 to present. A modest increase in records. Earliest

known coastal arrival is 1 at Portsmouth 4 Aug 1997 (S.R. Mirick, R.W. Suomala). A total of at least 24 individuals were recorded during twelve out of the 24 fall seasons 1957–1980, 18 of which were found in 1970–1980. Since 1980 recorded almost annually in the coastal region. Peak counts are 6 at Pease International Tradeport 7 Sep 2008 (L. Medlock, J. O’Shaughnessy) and 6 there 27 Aug 1995 (S.R. Mirick *et al.*), flocks of 4 having been found there several times. Latest known coastal record is 1 at Hampton 27 Oct 1965 (E.W. Phinney, R.M. Gamester).

Inland. Twenty individual birds recorded 1957–2011; in 13 of those 52 years it was found between 22 August and 26 September. One at Keene 22–23 Aug 1960 (T. Richards), 1 at Hopkinton 5–6 Sep 1970 (H.B. Miller *et al.*), 1 at Canterbury 12–14 Sep 1974 (K.C. Elkins *et al.*), 2 at Manchester 12–13 Sep 1975 and 4 there 26 Sep 1975 (K.C. Elkins, H.W. Parker), 1 at Manchester 13 Sep 1976 (H.W. Parker), 1 at Canterbury 12 Sep 1977 (K.C. Elkins), 1 at Hopkinton 18 Sep 1977 (H.B. Miller, A.E. Lajoie), 1 at Canterbury 29–30 Aug 1985 and 11 Sep 1990 (K.C. Elkins *et al.*), 2 there 27 Aug 1994 (R.A. Quinn *et al.*), 1 there 27 Aug 1998 (G. Ports), 1 at Rochester 4 Sep 2003 (A.J. Vazzano *et al.*), 1 at Canterbury 28 Aug 2009 and on 4 Sep 2010 (both E.A. Masterson *et al.*), and 1 at Laconia 21 Sep 2011 (H.C. Anderson).

Ruff (Reeve) *Calidris pugnax*

Status. Casual visitor from Eurasia. Ten records: 5 in spring and 5 in fall.

Records. The first state record was of 1 shot at Seabrook 23 Sep 1907 by Charles Fowler (Thayer 1909; MCZ #328595) as it fed with a small flock of Black-bellied Plovers. Six records occurred 1966–1973 and 3 in 2005–2011 which reflect an increase in reports of this species elsewhere along the Atlantic coast. A female was at Kensington 13–16 May 1967 (R.W. Smart *et al.*), and 1 was at Durham 3–6 May 1970 (L.G. and E.W. Phinney, D.J. Abbott, A.C. Borrer *et al.*). One was found at Hampton Falls 22 Aug 1971 (H.B. Miller, A.E. Lajoie) and possibly the same bird was at Rye 24 Aug 1971 (H. Everett, F. McFarland), 1 was at Rye 15 Sep 1967 (H. Everett, P. Morton), the northernmost 1 was inland at Jackson 5 Jul 1973 (R. May, R. Doucette), and 1 was at Stratham 26 Apr 2005 (I.C. and S. MacLeod). A male was at Chapman’s Landing, Stratham, 21 and 24 Apr 2011 (G. Tillman *et al.*; photo by L. Medlock on cover of NHBR 30 [1]) and a female at Charlestown 20 May 2011 (E.A. Masterson, K. Klapper *et al.*). Also see Masterson (2005b) for a summary of New Hampshire records up to that time. One accepted record for VT (C.C. Rimmer (pers.comm)), over 80 records for MA (Veit and Petersen 1993, BO database 2010), and over 30 records for ME (ME-BRC website, P.D. Vickery pers comm.).

Remarks. Brewster (1925) collected a female at Lake Umbagog 8 Sep 1874 and noted that “...to the best of my recollection, the bird was seen by me only within the state of ME, when living, although a few wingbeats might have carried her into New Hampshire, towards which she was heading...”

Short-billed Dowitcher *Limnodromus griseus*

Status. Annual and common spring and southbound migrant at the coast. Occasional inland at both seasons though somewhat more numerous and frequent inland in spring. Significantly increased since the early 1900s.

Early reports to 1950. The first certain records for the state are 3 collected at Rye Beach by W. Brewster 29 Jul 1871 (BSNH #15311), 8 Aug 1871, and 11 Aug 1871. Two were also collected in the same area 24 and 27 Aug 1880 by H. M. Spelman. One was collected at Rye Beach 14 Aug 1883 (BSNH #15305), 2 on 17 Aug 1883 (1 is BSNH #15306), and 1 on 2 Aug 1884 (BSNH #15304) by C. R. Lamb. The first known inland report is 4 found at the outlet of Lake Umbagog 14 Sep 1900 by Brewster (1925). Three were shot but none were preserved; this is the only occasion Brewster recorded the species at the Lake 1871–1909. Dearborn (1903) considered it regular and common at Hampton “between May 20 and 25” and again in August and September.

Allen (1903) called it “a rather common fall migrant coastwise” but he had no spring records at all; his extreme dates were 20 July to 25 August. I. G. T. Eaton collected 1 at Seabrook on the late spring date of 21 Jun 1906 and another there 26 Jul 1906. White (1929) reported 1 or more at Seabrook on the unusual late spring date of 26 June and 8 August of unnamed years but probably near the time of his writing. Only 6 reports were published in RNEB in 1936–1949, all in 1947–1949 in late May–early June and mid-September–early October. Fifteen were found at Cherry Pond 27 May 1949 (Richards 1965a). At the Isles of Shoals, Wright (1937a) and Jackson (1947) mention 1 at Appledore Island, ME, 5 Jul 1935, and 1 flying over Star Island 14 Jul 1935.

No record of this species’ occurrence in New Hampshire prior to 1870 has survived, but it must have been common to abundant as a transient there as it was in MA (Griscom and Snyder 1955) and ME (Palmer 1949). The coastal New England migrant population declined sharply due to hunting pressure from about 1880 to about 1910. From this low point it slowly recovered until sizeable flocks were seen again in MA in the mid-1930s. Though documentation is lacking, it can be presumed that such trends were surely reflected in New Hampshire.

1950 to present. Some continued increase in reports, though general numbers often vary widely from 1 year to the next.

Northbound migration. Earliest known coastal arrival is 1 at Hampton marsh 29 Apr 2006 (A.J. Vazzano, S. Wiley), and mean arrival date is 18 May. Peak coastal migration period is the last 2 weeks of May. Highest counts in this period are 670 at Rye 23 May 1970 (K.C. Elkins), 250 there 24 May 1970 (R.W. Smart *et al.*), 400–1000 at Seabrook 24–26 May 1996 (P.D. Hunt, S.R. Mirick *et al.*), though counts over 100 are unusual. Latest probable spring migrants were 2 at Seabrook 10 Jun 2006 (S.R. Mirick). Birds found 22 Jun 1968 at the coast (L.G. Phinney, R.W. Smart *et al.*), 28 Jun 1988 at Star Island (T.H. Arter *et al.*), and 29 Jun 1989 (T.H. Arter, L. Harper) were possibly nonbreeding stragglers or early southbound migrants.

Inland, earliest known spring arrival is 1 at Swansey 11 May 1963 (ASNH field trip). Inland reports have occurred in about 50% of springs since 1950, perhaps slightly more frequently since 1990. Highest inland counts have been 300–400 at Dummer 20 May 1973 (P. Doherty), 100+ at Amherst 20 May 1968 (T. Richards), 200 at Monroe 24 May 1998 (R.J. Bradley), and 400 at Errol 27 May 1991 (S.B. and M. Turner). During an exceptional fallout of shorebirds inland in 2004 a total of 438 birds were found at 6 localities 24–26 May, the highest single-locality count being 200 at Surry 26 May (J.P. Smith). Latest known inland spring records are 14 at Franconia Notch 30 May 1986 (P. Zandi, P.A. Phipps), 1 at Errol 1 Jun 2006 (C.J. Martin), 6 at Errol 12 Jun 1992 (S.B. and M. Turner), and 1 at Errol 13 Jun 2000 (R.A. Quinn, D. Brown).

Southbound migration. Earliest known coastal arrival are 4 flying south 29 Jun 1998 (S.R. Mirick) and 10 flying south at Rye 30 Jun 2001 (D.J. Abbott *et al.*). Exceptional early flights were at least 1234 counted passing Seavey Island 8 Jul 1998 (R.A. Quinn, J. Ellis; Quinn 1998) and 830 at White and Seavey Islands 4 Jul 2001 (D. Hayward). Peak coastal migration period is usually the last 2 weeks of July and the first 2 weeks of August; peak counts in this period are 315 on 19 Jul 1967 (L.G. and E.W. Phinney), 334 at the coast 18 Jul 2004 (S.R. Mirick *et al.*), and 710 at the coast 23 Jul 2006 (S.R. and J. Mirick), though counts over 100 are scarce. Latest coastal records are 2 on 19 Oct 1963 (K.C. Elkins *et al.*) and 1 at Rye 29 Oct 1968 (L.G. and E.W. Phinney).

Inland, highest unequivocal count and earliest fall arrival date is 5 at Little Cherry Pond, Jefferson, 30 Jun 1973 (T. Richards), the next earliest being 4 at Rochester 20 Jul 2007 (D. Hubbard); inland fall records have occurred at least 1 year out of 3 1950–2009, perhaps more frequently since 1995. Highest inland count is 50 at Exeter 25 Aug 1968 (R.W. Smart), the latter report having only a marginal claim to being inland. Latest known inland fall record is 2 at Charlestown 17 Oct 1967 (W.W. Kidder).

Taxonomic note. Short-billed Dowitchers found in New

England in spring are thought to be of the race *L. g. griseus* almost without exception, and individuals of the inland “Prairie” race *L. g. hendersoni* are believed to appear only rarely in summer or early fall. Two records of high-plumaged *L. g. hendersoni* birds: 1 at Hampton 17 May 2009 (S.R. and J. Mirick, R.W. Suomala) and 1 at North Hampton 29 Jul 2009 (S.R. Mirick). Specimens from the New Hampshire coast in the MCZ collection referred to the race *griseus* are 29 Jul 1871 (#203812), 8 Aug 1871 (#203815), 11 Aug 1871 (#203816), 17 Aug 1883 (#292150), 21 Jun 1906 (#182452), and 26 Jul 1906 (#182453). New Hampshire specimens in the MCZ collection referred to the race *hendersoni* are 27 Aug 1880 (#271697) and 24 Aug 1880 (#271698).

Long-billed Dowitcher *Limnodromus scolopaceus*

Status. Irregular to rare fall transient at the coast, once in spring; unproved to have occurred at the Isles of Shoals.

Early reports to 1950. The first record for the state was 1 collected at Rye Beach 2 Aug 1871 by W. Brewster (MCZ #203814). One was shot at Rye Beach by an unknown collector 2 Aug 1872 (MCZ #203814). One shot at Seabrook about 4 Oct 1910 was bought at the Boston market by C. R. Lamb (MCZ #328038). A male shot at Hampton 15 Sep 1918 by W. Olney was reported to Forbush (1925). There are no other known reports for the state from 1918 through 1957.

1950 to present. Very rare in spring; 1 seen together with Short-billed Dowitchers 17 May 1987 (C.R. Foss). Single birds at Hampton 19 Jul 1991 (S.R. Mirick, D.J. Abbott) and 1 at Hampton Falls 23 Jul 1974 (J.B. Grant *et al.*) seem most likely to be nonbreeding lingerers or very early southbound migrants. Otherwise, earliest probable southbound record is 1 at Hampton 28 Jul 1995 (M. Suomala). Only reported in 11 years 1950–1980 and in 16 years 1981–2009. High counts have been 4 on 20 Sep 1964 (V.H. Hebert) and 8 on 9 Nov 1959 (V.H. and R.C. Hebert). Inland records include 1 at the Rochester wastewater treatment plant 14 Sep 1998 (S.R. Mirick *et al.*; photo on cover of NHBR 17 [3]) and 2 at Leonard’s Pond, Errol, 13 Oct 2001 (R.A. Quinn *et al.*; photo). Most reports have been in August and September. The latest known fall record is 1 at Hampton 11 Nov 1959 (K.C. Elkins). A dowitcher (sp.) found at the coast 16 Dec 1978 (D.J. Abbott *et al.*) probably belongs here; 1 of this species was present at Newburyport, MA, only a few miles away at the same time.

Wilson’s Snipe *Gallinago delicata*

Status. Fairly common spring and fall migrant, slightly more numerous in fall. A local breeder north of the

White Mountains; irregular summer resident and less widespread breeder from the White Mountains southward to the Lakes Region and possibly in the western highlands. Occasional winter resident.

Early reports to 1950. The “Wood Snipe, *Scolopax fedoa*,” of Belknap (1792) almost certainly belongs here. Brewster (1925) considered it an abundant fall and rare spring transient at Lake Umbagog throughout 1871–1909. He had spring records only in May, and his extreme fall dates were 19 August to 19 October, though these may not have been for New Hampshire localities. He found no evidence of breeding. His high fall count was 40 at Leonard’s Pond, New Hampshire, 8 Oct 1890. He mentioned that it did not seem to be reduced by hunting pressure over the nearly 40 years he visited the area. Goodhue (1877a) found it “not common” at Webster until the fall of 1876 when some stayed “until the ground froze.” An anonymous writer (1896) reports 1 wintering near Brookline in the very mild 1895–1896 winter season.

Dearborn (1898) called it a “regular migrant, most noticeable in the fall, but never common” in Belknap and Merrimack Counties. In the coastal region, Dearborn (1903) considered it a “regular” migrant found once 7 May but in fall 17 September to 25 October, and he reports a mid-December record at Hampton (*fide* S.A. Shaw). Allen (1903) had little to add but 1 at Intervale 18 Sep 1897, and an observation at Rye Beach 22 July of an unstated year by W. Brewster, probably in 1869–1872 when he visited the coast almost annually. Wright (1911) had only 2 records for the Jefferson area: 1 at Meadows 20 Sep 1906, and 1 shot at Lancaster on the early date of 5 Mar 1887 (F.B. Spaulding).

White (1924b) called it a “rare spring migrant, and not common in the fall” at Concord, but later (1937) he considered it “uncommon” in spring and “somewhat more numerous” in fall, suggesting either some increase or improved knowledge. His extreme dates were 20–30 April in spring and 25 September to 22 October in fall, a straggler noted 25 Nov 1937 (E.D. Toland). He also had 1 mid-summer and 1 winter record on dates not provided. McGowan (1927) recorded 4–6 wintering at Manchester and commented that this was not unusual. Reports submitted to RNEB in 1936–1949 show it to be routine in spring mid-March to mid-May and mid-August to late November, and 1 at Nashua 1 Jan 1938 (P. Wright). The first known record for the Isles of Shoals was an early migrant 7 Aug 1929 (Allan 1931) but no state was specified.

In summary it appears that this species was probably a common migrant and breeder in New Hampshire in the precolonial period and continued so until the market hunting era in the late 1800s during which it was greatly reduced, especially south of the White Mountains from about 1885–1900 as intimated by Silver (1957). However, it remained a moderately numerous transient 1870–1940

and increased further during a nationwide moratorium on hunting this species 1942–1953.

1950 to present. Numbers were maintained as a migrant and increased as a breeder and summer resident.

Spring. Earliest known arrival is 2 at Littleton 3 Mar 1965 (R.J. Bradley), mean arrival being 30 March; peak migration period is the month of April. Peak counts are 53 at Greenland 11 Apr 2007 (S.R. Mirick, R.W. Suomala) and 52 at North Hampton 17 Apr 2007 (S. Young), both part of a total of at least 175 birds seen late Mar to mid-Apr 2007 (v.o.). Otherwise, peak count is 41 at East Kingston 9 Apr 1996 (D.J. Abbott) and at Concord 13 Apr 2008 (P.D. Hunt); daily totals over 25 are scarce. Migration is thought to be over by late May, an unusually late report for presumed migrants being 6 at Kensington 4 Jun 1967 (R.W. Lawrence).

Summer and breeding. The first recent probable breeding record occurred when snipe were observed several times at Colebrook from 2 Jun to 7 Jul 1948 (D.W. Brainard), and other summer records accumulated in the north country during the next 7 years. The first observation of young with adults was at Errol in Jul 1956 (V.H. Hebert). Birds were found in 1955–1980 in breeding season at 12 localities from the White Mountains northward where breeding was either confirmed or strongly suspected. South of the White Mountains, birds were found in breeding season at 8 localities but were not proved to breed 1955–1980. In the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or considered probable at 28 sites statewide, concentrated north of the White Mountains and south to the Lakes Region, especially in the Connecticut River valley (Foss 1994). It is now considered a locally common breeder in the state. Believed nesting in Hancock May–Jun 1979 and virtually each year since (H.M. Cadot). Single birds at Swanzey 30 Jun 2005 (P.D. Hunt) and at Dublin 1 Jul 2005 (E.A. Masterson *et al.*) may represent rare and local breeders so far south. BBS data show a small annual population trend decrease averaging under 1% per year for both 1966–2009 and 1999–2009 (Appendix IV).

Fall. First migrants appear in the southern part of the state by mid-August such as 5 Aug 2005 at Fremont (T. Bronson) and are found there regularly by late August. Peak migration period is the last week of September and the month of October. High count in this period is a low 15 at Keene 26 Sep 1960 (T. Richards). Records at Star Island are 1 on 20 Sep 1999 (R.W. Suomala *et al.*), 2 on 5 Oct 1969 (R.W. Smart *et al.*), and 1 on 7 Oct 1973 (D.W. Finch *et al.*). Birds are regularly found in southern New Hampshire into mid- or even late December.

Winter. Records into January or later are: 1 at Littleton 1 Jan 1963 (R.J. Bradley), 1 at Littleton 2 Jan 1967 (R.J. Bradley), 1 at Portsmouth 5 Jan 1968 (E.W. Phinney), 1 at Nashua 1 and 2 Jan 1969 (M.G. Bouchard *et al.*), 1 at

Durham 2 Feb 1972 (P.A. Wright), 1 at Salem 13 Feb 2007 (A. Maley), 1 at Durham 16 Feb 1962 (A.C. Borrer), and 1 at New London 31 Jan to 11 Feb 1980 (K.C. Elkins *et al.*).

American Woodcock *Scolopax minor*

Status. Regular and common spring and fall migrant and common summer resident and breeder. Known to have successfully wintered once; 2 other winter records. The population size fluctuates from year to year, sometimes widely, but appears to have declined slowly since about 1970.

Early reports to 1950. First reported for the state by Belknap (1792) as the “Woodcock, *Scolopax rustica*,” using the taxonomic name for the Eurasian species. Dow (1893) reports that James W. Blake shot 73 in or near Hampton in 1857–1890. Fishermen are believed to have introduced earthworms to the Lake Umbagog region around 1825 for bait and woodcock are thought to have appeared there shortly afterwards and were common by the late 1800s (Silver 1957, WAP 2005). Brewster (1925) found it a “[l]ocally common summer resident” in the Lake Umbagog region 1871–1909, occurring there between extreme dates of 11 May to 29 October, these dates not necessarily being for New Hampshire localities. He found it most often near Errol and along the valley of the Magalloway River, but noted that it declined significantly there by 1900–1910 due to greatly increased hunting pressure. Goodhue (1877a) considered it a “[c]ommon summer resident” that bred regularly near Webster.

In many parts of the state, especially south of the White Mountains, market hunting took a heavy toll. As reported by Richards (1954): “Wholesale slaughter flourished most actively between 1850 and 1900, the peak probably being reached about the middle of the period – just before the number of birds began to decline seriously. Many of the birds killed outside of New Hampshire would ordinarily have occurred here in migration, and this slaughter elsewhere did more to reduce our birds than local killing...[though] New Hampshire hunters must take their share of the blame...”

Dearborn (1903) wrote that “This much persecuted bird is steadily decreasing” in the coastal region. Allen (1903) called it “A not uncommon spring and fall migrant and a less common summer resident,” but only in “the more remote parts of the state,” having seen it himself up to 1500 feet elevation near Intervale. Marble (1927) had only 1 record for Crawford Notch on 28 Aug 1905, but he thought it occurred more often. Howe (1901–1903) reported 1 at Newfound Lake 14 and 22 Jul 1902. Wright (1911) found it regular but local in the Jefferson region. The only known successful wintering was a bird at the New Hampton Fish Hatchery through the 1947–1948

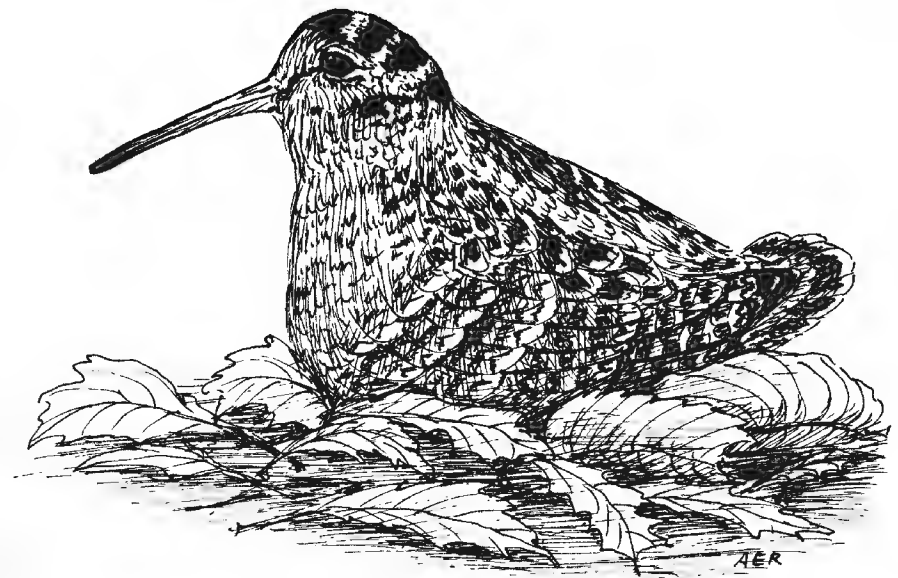
winter at least to 28 Feb (V.H. Hebert *et al.*). Regular reports were included in RNEB from mid-March to late November throughout 1936–1949.

As outlined by Silver (1957), the population statewide showed little increase from 1900 to about 1920 but increased noticeably in the 1920s, only to fall again through the 1930s. Phillips (1927) reported 1 shot as late as 30 Nov 1927 in Rockingham County. White (1924b, 1937) said that it had been much commoner in the Concord area in about the 1860s and 1870s but intimated little increase since 1900. Allan (1931) reported the first known record for the Isles of Shoals 10 Nov 1929, the state not specified but probably ME. Silver (1957) concluded that the woodcock recovered well statewide in the 1940s “except in the northern sections” of the state, and reported hunting kills of “around 9,000 birds” in 1935 and 8874 in 1947.

1950 to present. Numbers appear to have declined slightly in the late 1950s but appear to have increased to 1962, followed by a slight decline as a breeder since about 1990. Population trend listed as uncertain by Hunt (2012).

Spring. There is a cluster of 4 reports from 23 Feb 1991 at Kensington (G.W. Gavutis) through the end of the month, all in the southern part of the state, that probably reflect exceptionally early migrants. Earliest known multiple report is 3 at Kensington 1 Mar 1998 (G.W. Gavutis, Jr.), and mean arrival date is 11 March. Peak migration period is typically the last week of March and the first 3 weeks of April. The first birds often arrive north of the White Mountains when the ground is still snow-covered and many waters are frozen. Peak count is 15 on 9 Apr 1954 (C. Merrill *et al.*) at New Hampton. Reported counts over 8 are unusual but could probably be exceeded with special effort. Migration is thought to be completed by early May at the latest. Spring records for the Isles of Shoals are 1 at Star Island 25 Apr 1965 (ASNH field trip) and 2 there 4 May 1975 (D.J. Abbott *et al.*), and 1 at White and Seavey Islands 12 May 2001 (D. Hayward, A. LeFrancois).

Summer and breeding. Recorded virtually statewide since 1950 but slightly less common from the White Mountains northward and numbers there vary from year to year. Young have been observed as early as late April (NHFG data); an old report by an anonymous writer (1896) mentioned a brood just hatched on the remarkable date of 13 Mar 1896 in Brookline on a south-facing hillside after a mild winter. This report was considered “improbable” by Allen (1903) but it has recently been duplicated in eastern MA. Birds have been found at elevations up to 1600 feet on Iron Mountain (Willets) in breeding season. Breeding was confirmed or considered probable in 84 atlas blocks statewide in 1981–1986 for the *Atlas of Breeding Birds* (Foss 1994). Such blocks are



widely distributed over the state, perhaps slightly less so north of the White Mountains. “Annual counts of singing males along permanent, randomly selected routes in the central and northern portions of the breeding range since 1968 provide an index of the woodcock breeding population. Indices for New Hampshire... indicate a long-term decline” (Bortner 1987). The same survey of 18 consistent routes shows a mean of 3.60 singing males per route from 1968–1973 and a mean of 3.25 for 2005–2010, indicating little change (E.G. Robinson at NHFG pers. comm.). Drainage of wetlands, suburban development, and habitat succession have destroyed breeding, wintering, and migration habitat, especially recently in the southern part of the state, likely causes of the decline. Also, pesticides have affected earthworm populations in many areas, 1 of the species’ primary food sources. (Lacaille 1968–1969, WAP 2005). BBS data show a small annual population trend decline averaging under 1% per year for both 1966–2009 and 1999–2009 (Appendix IV).

Fall. Postbreeding wandering and some migratory movement probably occurs as early as mid-August, but peak migration period is the last week of September and the first 3 weeks of October. High count in this period is 40 at Jefferson 21 Oct 2000 (G.W. Gavutis, Jr.). It is regularly found until early November in the coastal region and the southern portions of the 2 major river valleys. Latest dates north of the White Mountains are 3 at Pittsburg 29 Oct 1961 (F.T. Scott), 6 at Lancaster 22 Nov 1998 (G.W. Gavutis, Jr.), and 6 at Jefferson 6 Dec 1998 (G.W. Gavutis, Jr.). Other late reports are 1 at Durham 22 Dec 1990 (CBC), 1 at Plymouth 12 Dec 1995 (R. Cook, C.J. Martin), 1 at the coast 20 Dec 1997 (CBC), and 1 at Lee/Durham 26 Dec 1992 (CBC). At the Isles of Shoals, there are 5 fall records for Star Island in 1967–1980, extreme dates being 2 on 26 Oct 1969 (R.W. Smart *et al.*) to 1 on 12 Nov 1972 (D.W. Finch *et al.*).

Winter. Other than the 1947–1948 report, the few other winter records are 1 at Littleton 9 and 10 Jan 1960 (R.J. Bradley), 1 at Hampton 23 Jan 1998 (P. Lacourse), 1 at

Nashua 26 Feb 1976 (T. Richards), and 1 at Chichester 7 Feb 1974 (W. Blodgett).

Wilson's Phalarope *Phalaropus tricolor*

Status. Rare spring and fall transient in the coastal region. Five inland spring records and 3 inland fall records. Increase in reports, especially 1960–1980, but many fewer since.

Early reports to 1950. The first report for the state is a bird collected at Rye Beach 15 Aug 1872 (MCZ #330450) by W. Brewster. Single birds were also taken at Seabrook on each of 26 and 29 Aug 1910 by F. S. Hersey (MCZ #330440 and #330439 respectively). Griscom and Snyder (1955) note that this species increased in MA “in recent decades” just prior to the time of writing, which increase may also have been reflected in New Hampshire, though data are lacking to prove it.

1950 to present. Increase in this period, some of which may be attributable to the presence of a few birds nesting at Parker River National Wildlife Refuge, just south of the state boundary, probably since the early 1960s (Veit and Petersen 1993).

Spring. At least 12 records between extreme dates of 1 at North Hampton 8 May 2001 (M. Milligan) and a female inland at Charlestown 6 Jun 1976 (W.W. Kidder), the only other inland spring records being 1 at Plymouth 13–14 May 1976 (S.A. Fogleman, V.H. Hebert *et al.*), 1 at Rochester 12–13 May 1982 (S.B. Turner), 1 at Errol 27 May 1991 (S.B. and M. Turner), and 2 at Exeter 27 May 2002 (R.A. Woodward *et al.*).

Fall. Early arrival known is 1 at Hampton 3–4 Jul 1995 (S.R. Mirick *et al.*), next earliest being 1 at Rye Harbor 6 Jul 1966 (L.G. and E.W. Phinney), and then not until 1 at Rye 1 Aug 1970 (E.W. Phinney, R.W. Smart). At least 29 individuals were recorded in the coastal region 1960–1980, birds being seen in all but 4 years of that period, and 7 birds being found in 1967. Has occurred much less frequently 1980–2009: only 8 reports of 10 individuals and only 1 since 1992 (!), 1 at North Hampton 17 Aug 2008 (S.R. and J. Mirick). The great majority of records have been in the last 2 weeks of August and the first 2 weeks of September. Latest known coastal reports are 1 at Hampton 10 Nov 1963 (V.H. and R.C. Hebert) and 1 at Rye 27 Oct 1985 (V.H. Hebert). Excluding 4 records from Exeter before 1980, there are only 3 inland fall records: 1 at Wilmot 24 Jul 1983 (K.C. Elkins *et al.*), 1 at Randolph 8–9 Aug 1964 (H.C. McDade *et al.*), and 1 at Charlestown 23 Aug 1976 (W.W. Kidder).

Red-necked Phalarope *Phalaropus lobatus*

Status. Regular spring and fall migrant, principally at the Isles of Shoals or farther offshore, rarely seen from the

mainland shore, numbers much more concentrated in spring during the shorter migration period. Casual inland in spring and occasional there in fall. The most commonly reported phalarope in New Hampshire.

Early reports to 1950. First reported for the state by Brewster (1925) at Lake Umbagog where he found it a rare spring migrant, occurring “more commonly...in late summer and early autumn” between extreme dates of 22 August to 22 September. Specific New Hampshire records were “several” near the outlet of the lake 22 Aug 1874, at least 12 there 3 Sep 1887 of which 4 were collected and 3 are extant (MCZ #214038, #292221, #292222), and at least 2 there 22 Sep 1888. H. M. Spelman collected 1 at Rye Beach 30 Aug 1880 (MCZ #271744).

Brasher (1894) found “numerous flocks” about 20 miles off the coast 9 Aug 1893. Prime (1889) reported 1 at Profile Lake, Franconia Notch, in September “about” 1884, and 1 collected at Lonesome Lake at about 3000 feet elevation 22 Sep 1888, the specimen apparently not preserved. Wright (1911) recorded 1 collected at Lancaster 8 Oct 1888 by F. B. Spaulding.

Allen (1903) called it an “abundant spring and fall migrant offshore, casual inland” on the basis of several of the above reports. But Dearborn (1903) surprisingly knew of no certain records for the state. Marble (1927) reported 1 at Crawford Notch 19 Aug 1910. Reports of inland fall records of 1 at Crawford Notch “within two feet” in Sep 1940 (R. Eaton) and 1 at Wentworth’s Location 8 Sep 1949 (T. Richards) were published in RNEB.

At the Isles of Shoals, Torrey (1897) reported flocks of “thousands” of phalaropes seen by Celia Thaxter in May 1892, which also appeared elsewhere along the New England coast. As mentioned in the Red Phalarope species account, about 5% of these flocks are thought to have been Red-necked Phalaropes. Allan (1931) reported 1 on 7 Aug 1929, but did not say in which state. Jackson (1947) stated that “very few...have been observed at the Shoals” in 1928–1938, usually “at intervals of two or three years following storms in August.”

1950 to present. No change in numbers noted.

Spring. Earliest known coastal arrival is 4 at Star Island 2 May 1971 (R.W. Smart, A.C. Borrer *et al.*). Peak migration period offshore is the last 2 weeks of May, high counts in this period being 1600 at Jeffreys Ledge 30 May 1968, 750 near the Isles of Shoals 23 May 1965, and 600+ near the Isles of Shoals 24 May 1964 (all ASNH field trips). Latest known spring record is 6 Jun in 1970 (D.J. Abbott) when 5 were found at North Hampton and in 1971 (ASNH field trip) when 25+ were found at Jeffreys Ledge. In 2005 a northeast storm brought over 100 birds to the mainland coast 24–26 May and 21 to White and Seavey Islands 26–27 May, the peak being over 50 at Rye 26 May (v.o.).

Inland there are 13 spring records 1950–2011: 1 at Charlestown 27 Apr 1968 (ASNH field trip), also the earliest known spring record for the state; 1 female at Chesterfield and another female at Walpole 9 May 1960 (T. Richards); 5 at Squam Lake 1 Jun 1969 (T. Richards.); singles at Exeter 6 Jun 1992 (P.D. Hunt, W.W. Fogleman) and 27 May 1998 (S.R. Mirick). A modest inland flight following heavy rains 12–16 May 2006: 3 at Jefferson 12–13 May (D. Govatski, S.B. Turner *et al.*), 1 at Dorchester 14 May (J. Granton *et al.*), 17 at Whitefield 14 May (C. and L. Vendt *et al.*), 2 at Concord 15 May (E.A. Masterson *et al.*), 2 at Gilford 15 May (A. Lavin), and 1 at Exeter 16 May (T. Bronson). One was at Concord 28 May 2009 (R.A. Quinn), and 1 at Derry 20 May 2011 (M. Thompson).

Southbound migration. Earliest known arrivals are 3 at Jeffreys Ledge 14 Jul 2009 and 1 at Rye 22 Jul 1996 (both A.J. Vazzano *et al.*). Taber (1955) reported about 25 near the Isles of Shoals 24 Jul 1955 (O. Root) and “about 30 birds” in the same area 30 Jul 1954 (W. Taber *et al.*) which may belong here, though they were not identified to species. Four were at Jeffreys Ledge 30 Jul 2003 (M.G. Harvey, B. Griffith) and 60 near the Isles of Shoals 1 Aug 2009 (S.R. Mirick *et al.*). Peak migration period is the last 3 weeks of August and the first 2 weeks of September. Peak counts in this period are 414 in the Rye–North Hampton area 31 Aug 1954 (P.E. Keenan *et al.*) shortly after Hurricane Carol, 181 near the Isles of Shoals 13 Sep 1964 (ASNH field trip), and 120 off Star Island 6 Sep 1971 (J.E. Cavanagh, E.W. Phinney), these being the only fall coastal counts known over 100. Latest fall report is 1 at Star Island 12 Nov 1972 (D.W. Finch, E.W. Phinney *et al.*).

Inland, there have been 15 reports since 1950, extremes being 1 at Squam Lake 25 Jul 1960 (T. Richards) and 1 at Lebanon 13 Oct 1990 (P.D. Hunt, L. Bunten). Five of the other 13 records have been in late August, 7 have been in September, and the latest record north of the White Mountains was at Pittsburg 23–29 Sep 1963 (F.T. Scott).

Red Phalarope *Phalaropus fulicarius*

Status. Uncommon to rare spring and fall migrant offshore and, occasionally, at the Isles of Shoals, especially after easterly storms; rarely seen from the mainland shore. Occasional into early winter. Very rare inland in spring and fall.

Early reports to 1950. The first certain records for New Hampshire are 1 collected at Rye Beach 18 Sep 1879 by H. M. Spelman (MCZ #271742) and 1 taken in the Hampton River 15 Sep 1888 by B. F. Damsell (MOS #X01-183). The next reports are inland ones, Brewster (1925) finding 2 near the outlet of Lake Umbagog 2 Oct 1888, and 1 there 6 Oct 1888, all of which he collected

(MCZ #219164, #219165, #219166). He also found 2 more in the same general area 22 Sep 1889 (MCZ #230277, BSNH #15331) and 1 on 24 Sep 1889. Osgood (1890–1891) noted that he had “put up a flock of a dozen or so in the middle of Lake Umbagog,” though he gave no date nor indicated in which state the birds might have been at the time.

Dearborn (1903) commented that it “is sometimes seen during the fall migrations along the coast,” seldom ashore but occasionally off the beach. He found 2 specimens in local collections but they could have been taken in ME. Allen (1903) merely stated that it “is found in migration off the coast well out to sea” and only occurred inland when driven by storms. Thayer (1912) reports 1 found dead at Dublin 2 Oct 1907, and another bird thought to be this species at Dublin Lake 11 Oct 1903 during an easterly storm. One was collected at Laconia 6 Oct 1947 by S. G. Emilio (UNH #4163-B).

At the Isles of Shoals, Torrey (1897) records that Celia Thaxter saw some birds believed to be this species on a date in 1891 now lost. In May 1892, she saw thousands of birds which also appeared at several other points along the New England coast. These flocks consisted of both Red and Red-necked Phalaropes in the proportion of 20 Red Phalaropes to 1 Red-necked Phalarope (Griscom and Snyder 1955).

1950 to present. Little or no change evident.

Spring. Seven coastal records 1950–2005: 5 at the Isles of Shoals 11 May 1969 (ASNH field trip); 5 at Jeffreys Ledge 30 May 1967 (R.W. Smart *et al.*); 1 there 21 May 1994 (I.C. MacLeod); 1 there 30 May 1968 (ASNH field trip); 120 there 17 May 1980 (E.W. Phinney); and the latest known in spring, 1 there 11 Jun 1978 (P.D. Vickery). In 2005 a northeast storm brought at least 25 birds to the mainland coast 24–27 May and 2 to White and Seavey Islands 26–27 May (v.o.). More complete data for offshore Essex County, MA (Veit and Petersen 1993), suggest that it might be expected in New Hampshire waters as early as late April and until early June.

Inland spring records include a female at Chesterfield 24 May 1960 (T. Richards); very early reports at Keene 11 Apr 1993 (R. and B. Herm) and at Goffstown 11–13 Apr 1993 (K. Andrus, R.A. Quinn, K.C. Elkins *et al.*; photos); and a modest inland flight 14–15 May 2006 (see Red-necked Phalarope above): 1 at Bow 14 May (I.C. MacLeod), 3 at Concord 14 May (R.A. Woodward), 1 at Dorchester 14 May (J. Granton *et al.*), and 3 at Gilford 15 May (A. LaVin, D. Austin). One was photographed at Littleton 8 Jun 2009 (M. Aldrich), and 1 at Charlestown 20 May 2011 (E.A. Masterson *et al.*).

Summer. Two stragglers or possible southbound migrants at Jeffreys Ledge 25 Jul 2008 (E.A. Masterson).

Fall. Earliest known fall arrivals are 1 at Jeffreys Ledge 6

Aug 2009 (L. Kras, J. Lambert) and 8 at the Isles of Shoals 28 Aug 1969 (E.W. Phinney). Peak migration period is late October and early November, peak counts being 200+ off Portsmouth 17 Nov 1954 (M. Libby), 75+ migrating past Hampton 13 Nov 1960 (R.W. Smart *et al.*), and 51 at Rye 3 Nov 1966 (L.G. Phinney *et al.*). One was at Star Island 17 Sep 1999 (R.W. Suomala *et al.*). It is thought that the number of migrants tapers off rapidly after mid-November to none except occasional lingering birds in early or mid-December.

Inland fall records have been 1 at Rochester 14 Sep 2007 (D. Coleman *et al.*), 2 at Concord 16 Sep 1982 (T. Richards), 1 at Exeter 19 Sep 2008 (T. Bronson, L. Medlock), 1 at Piermont 2 Oct 1999 (L. Bunten), 1 at Hinsdale 4 Oct 1987 (S.R. Mirick), 1 at Exeter 12 Oct 1998 (M. Medieros), 1 at Marlow 13 Oct 1959 (T. Richards; photo), 1 at Jefferson 15 Oct 1966 (T. Richards *et al.*; photo), 1 at Durham 23 Oct 1996 (M. Wittner *et al.*), and 1 at Lyme 8 Nov 1992 (C. Chen).

Winter. Three records: 6 at the Isles of Shoals 26 Dec 1966 (K.C. Elkins *et al.*), 1 at Hampton 1 Jan 2009 (B. Griffith), and 1 at Rye 26 Jan 1964 (J.E. Cavanagh).

FAMILY LARIDAE

Black-legged Kittiwake *Rissa tridactyla*

Status. Regular and common, rarely abundant, fall and winter resident in offshore waters and occasionally along the mainland coast; casual there in spring. Regular fall transient and winter visitor to the Isles of Shoals. Five inland records and 6 summer reports.

Early reports to 1950. Though the mention of this species in winter by Thaxter (1870) is technically for Appledore Island, ME, the species was clearly common in the entire Isles of Shoals area at the time. Dearborn (1903) called the birds “common winter residents, appearing here the 1st of November. They are more plentiful in early and late, than in mid-winter, as the majority continue southward in their migration. They stick pretty closely to the ocean but sometimes come inland. One was shot on Newmarket River November 10, 1900.” Allen (1903) merely called it “A common winter resident off the coast.” Allan (1931) listed a date of 13 Jan 1930 for the Isles of Shoals without indicating the specific state. While few other records prior to 1950 are available, there is no indication that it was anything but common in offshore waters since 1870.

1950 to present. No observed change in status or occurrence in this period. More work in offshore waters and at the Isles of Shoals might indicate some change but so far is lacking.

Fall. Six September records, earliest of which are 2 at Jeffreys Ledge 8 Sep 1968 (R.W. Smart *et al.*) and 1 off Portsmouth 8 Sep 1974 (A.C. Borrer *et al.*). Aside from these 6 reports, there are no additional records until early October. Its presence is routine offshore by mid- to late October. As suggested by Palmer (1949) for ME, numbers typically appear to increase through November until mid- or late December. While numbers vary widely from year to year and even from day to day, highest New Hampshire known counts in this period are 100 at Jeffreys Ledge 14 Nov 1971 (R.W. Smart *et al.*), 117 there 2 Nov 1982 (D.J. Abbott), 200 there 12 Nov 1972 (D.W. Finch *et al.*), and 350 there 27 Nov 1977 (D.W. Finch *et al.*). Fall reports from the mainland are concentrated in November, and typical numbers are in the 1–5 range, though an exceptional total of 79 birds was seen from the mainland coast 28 Nov 2004 (A. and B. Delorey, S.R. Mirick *et al.*).

Winter. Numbers seen within twenty miles of the coast at this season depend greatly on the weather farther out at sea. When seen, the birds tend to be dispersed rather than in flocks, though concentrations occur occasionally. Representative high counts are about 100+ at Jeffreys Ledge 26 Jan 1969 (ASNH field trip), 200 there 27 Jan 1974 (D.J. Abbott *et al.*), and about 1000 there 30 Jan 1972 (D.W. Finch *et al.*). Occasional birds are seen along the mainland coast in January and February, chiefly after easterly storms. The latest known winter record is 3 at Rye 26 Feb 1966 (E.W. Phinney).

Spring. The known reports for March or April are 1 at Rye 4 Mar 1994 (A. Delorey), 2 at Jeffreys Ledge 9 Mar 2002 (S.R. Mirick, J. Lawrence), 1 there 15 Mar 2009 (E.A. Masterson), 4 at Rye 29 Mar 2003 (M.G. Harvey, B. Griffiths), and 1 at Rye 21 Mar 1976 (G.C. Robbins). Palmer (1949) noted that this species begins “to withdraw in early March, the last of them usually having gone [from ME waters] by April 12.”

Ten reports after April: 1 at Rye 7 May 1961 (K.C. Elkins *et al.*); 1 at Jeffreys Ledge 6 Jun 1971 (R.W. Smart *et al.*); 2 adults and an immature there 7 Jun 1970 (R.W. Smart *et al.*); 4 there 12 May 1979 (E.W. Phinney *et al.*); 65 there 17 May 1980, the high spring count (E.W. Phinney); 6 at Pulpit Rocks 16 May 2001 (S.R. Mirick); 1 near the Isles of Shoals 21 May 1994 (I.C. MacLeod *et al.*); 2 at Hampton 21 May 1995 (R.A. Quinn *et al.*); 5 off the Isles of Shoals 27 May 1995 (D.B. Donsker, S.R. Mirick); 1 at White and Seavey Islands 30 May 2003 (M. Barney *et al.*); 1 at North Hampton 1 Jun 2003 (S.R. Mirick); 1 at Rye 2 Jun 2001 (A. and B. Delorey); 1 at North Hampton 2 Jun 2006 (S.R. Mirick); 1 off the Isles of Shoals 3 Jun 1973 (L.G. Phinney *et al.*); 2 at Rye Ledge 5 Jun 2004 (S.R. Mirick); and 1 at White and Seavey Islands 27 May 2007 (D. and M. Hayward).

Summer. Fourteen birds found after June: a subadult bird

in very worn plumage at Seabrook 31 Jul 1972 (L.G. and E.W. Phinney, R.W. Smart, A.R. Keith), a total of 8 at Jeffreys Ledge 16 and 19 Aug 2009 (E.A. Masterson, M. Oyler), a juvenile at Rye 19 Aug 1972 (J.E. Cavanagh), 1 at Rye 21 Aug 1997 (S.R. Mirick, A. and B. Delorey), 2 at the coast 29 Aug 2009 (S.R. and J. Mirick), and 1 at Rye 29 Aug 1998 (M. Resch). The presence of these birds and the 4 late spring and 6 early fall records indicate that it is present casually in inshore and offshore waters in summer.

Inland. An exceptional flock of 16 was at Turkey Pond, Concord, 22 May 1972 (T. Richards, K.C. Elkins, R.W. Smart) despite the lack of an easterly storm; a photograph taken by J. Mullins appears in NHAQ 26 (1): 3. One was found at Lebanon 14 Dec 1994 (P.D. Hunt, D. Crook), and 2 were at Enfield 19–20 Nov 1995 (S.R. Mirick, P.D. Hunt). One juvenile was at Rochester 13 Nov 2007 (S.R. Mirick, B. Griffith).

Ivory Gull *Pagophila eburnea*

Status. Vagrant from the north. Four records: a juvenile was seen in (late?) Dec 1948 (Burrell, Harrington) "... flying south off [Great] Boar's Head, N. H...and [was] followed south by car for half an hour..." (Griscom 1949b); what is presumed to be the same individual "hung around the north end of Plum Island," Newburyport, MA, about 4 miles south of the state line 27 Jan to 13 Feb 1949. A second bird was found at Great Boar's Head 1 Jan 1971 (L.G. and E.W. Phinney; photo), 1 was at Portsmouth 15–21 Jan 1983 (R.W. Stephenson, E.W. Phinney *et al.*), and 1 was at Hampton 11 Jan 2010 (B. Crowley, J. Scott, L. Thurston). Two accepted records for VT (C.C. Rimmer pers. comm.), at least 11 records for MA (Veit and Petersen 1993, BO database 2010), and over 12 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Sabine's Gull *Xema sabini*

Status. Very rare visitor. Ten records, all but 2 in September and October. The first known state report was at Jeffreys Ledge 8 Sep 1968 (R.W. Smart, D.W. Finch, N. Proctor). One was seen about halfway between Hampton Beach and Star Island 21 Sep 1975 (L.G. and E.W. Phinney, T. Richards, D.J. Abbott *et al.*). One was reported at Jeffreys Ledge 16 Sep 1979 (E.W. Phinney, S.A. Fogleman) and 1 at Jeffreys Ledge 7 Oct 1979 (S.A. Fogleman *et al.*). One was at Seabrook 18 May 1980 (E.W. Phinney, R.W. Smart), 1 at Hampton 22 Sep 1983 (E.W. Phinney), 1 about 30 miles east of Hampton 27 Aug 1985 (R. Andrews), and 1 offshore of Rye 22 Sep 2007 (B. Griffith). A first-year bird was seen and photographed at several locations along the mainland coast 26 Jun to 26 Jul 2009 (M.G. Harvey *et al.*). A juvenile seen with an adult Black-

headed Gull was found at Newfound Lake in Bristol 4–6 Oct 2010 (P. Murray, J. Lambert), the only known inland record. See Harvey (2009) for a summary and discussion of New Hampshire records. Annual in MA (Veit and Petersen 1993, BO database 2010), 11 accepted records for VT (C.C. Rimmer pers. comm.), and several for ME (ME-BRC website).

Bonaparte's Gull *Chroicocephalus philadelphia*

Status. Regular and common spring and fall migrant in the coastal region, a few wintering occasionally, and some regularly lingering through the summer. Inland, a regular spring and irregular fall transient in small numbers, casual there in late summer but unknown in winter.

Early reports to 1950. The first report for the state is probably the "Mackerel Gull, *Larus ridibundus*," listed by Belknap (1792) as suggested by Eliot (1960), despite the use of the specific epithet now used for Black-headed Gull. The next reports are those of Brewster (1924) at Lake Umbagog in 1871–1909 where he found it a "common transient visitor in late summer and early autumn," especially along the Androscoggin River and near the outlet of the lake. His usual expected dates there were 15 August to 15 October, possibly but not certainly at New Hampshire localities; his extreme dates were a 4 Aug 1873 record in ME and 1 in New Hampshire 31 Oct 1883. The largest number he ever saw together was "ten or a dozen in one flock." However, a flock of about 100 at Plymouth in May 1877 (Anonymous 1877), is to this day the largest number ever reported from an inland locality and greatly exceeds the size of any more recent records. The same writer (1877) notes that 3 were collected, though none are known to have been preserved, and mentions that 1877 was the third consecutive spring that the species had appeared there.

Dearborn (1898) listed it for Belknap and Merrimack Counties on the testimony of C. F. Goodhue, though he provides no specific records. But for the coastal region Dearborn (1903) gave it as "common...in August, September, and the early days of October," though he does not mention reports from any other season. Dearborn (1905) also listed it inland at Northfield without details. Allen's (1903) description of its status was probably more accurate: "A spring and fall migrant and rare winter resident on the coast, where it is probably more common than the few observations would seem to indicate; occasional inland..." His inland records were as follows: 1 shot at Charlestown 3 Aug 1897 (W.M. Buswell), single birds shot on different dates at Milford on unnamed dates (*fide* J.P. Melzer), 1 immature shot at Sunapee Lake Aug 1880 (*fide* W.H. Fox), and 2 collected at Webster by C. F. Goodhue: 1 "about 1890" and 1 in late Aug 1897.

Wright (1911) had only 1 record for the Jefferson region: 1 shot near Lancaster 8 Nov 1904 (*fide* F.B. Spaulding).

Lord (1918) recorded 1 in the Hanover area 21 Apr 1917, almost certainly but not positively in New Hampshire. Goodhue (1922) considered it a common coastal migrant, noting that it occasionally lingered there in spring until June. White (1924b) said it was only “occasionally seen on migration” in the Concord region, apparently knowing of but 1 occurrence other than Goodhue’s 2 records at Webster. Thirteen years later, White (1937) had obtained only 1 more report. Shelley (1935a) recorded 1 shot at Troy 5 Aug 1933 (L.R. Nelson).

Nine reports submitted to RNEB in 1936–1949 include Apr inland records at Enfield in 1941 and Hanover in 1944, Aug inland records at Chocorua Lake in 1945 and Squam Lake in 1948, a Sep record for Squam Lake in 1949, and a high count of 550 at the coast 22 Nov 1949 (T. Richards).

At the Isles of Shoals, Allan (1931) had no records and Wright (1937a) had no positive reports until he found an immature off Lunging Island 19 Aug 1936. Later the same day “five others were seen, and several more were seen on the 20th, 21st, and the 22nd,” the exact state not mentioned. However, he reports “[s]mall gulls with black heads...seen occasionally during the earlier part of the summer in both 1935 and 1936...” that were not positively identified but which probably belong here. Jackson’s (1947) comments for 1928–1938 indicate that the species was more common than the earlier writers suggest: “Nearly every summer one or two birds of this species are seen in the vicinity of the Shoals. They are much more common along the shore, especially in Portsmouth Harbor.”

1950 to present. Modest increase in reports, especially in late fall and winter.

Spring. Earliest coastal migrants are suspected by mid-April and 250 storm-driven birds were at the coast 16 Apr 2007 (E.A. Masterson). Usual peak coastal migration period is the month of May. Numbers vary widely from year to year from only a handful of single birds to sizeable flocks. Peak coastal counts are 200 at New Castle 22 May 2007 (T. Bronson *et al.*) and 250 on 23 May 1965 (L.G. and E.W. Phinney, R.W. Smart *et al.*). In the Isles of Shoals area and farther offshore, earliest known migrants are about 45 at Jeffreys Ledge 2 May 1971 (A.C. Borrer), this number hinting that in some years much of the northbound coastal migration may pass by off the coast. Extreme late migrants at the coast or the Isles of Shoals cannot be told from summer lingerers, but all migrants are thought to have passed through by mid-June.

Inland, the earliest known arrivals are 1 at Concord 28 Mar 1987 (R.A. Quinn) and 2 at Charlestown 3 Apr 1999 (P.D. Hunt *et al.*). Peak migration period is the same as at the coast, and peak inland counts (excepting the 1877 report) are 14 at Littleton 15 May 1997 and 10 May 2000 (both R.J. Bradley), 32 at Errol 4 May 1998, 30 there 7

May 2004 (both C.J. Martin *et al.*), and 33 at Spofford Lake 14 May 2010 (E.A. Masterson), the only inland spring counts over 10 since 1950. It is typically reported from more localities and in larger numbers from the Connecticut River valley than elsewhere inland in spring. Latest inland reports are 1 at Pontook Reservoir, Dummer, 10 Jun 1965 (F. Moody) and 3 at First Connecticut Lake, Pittsburg, 20 Jun 1998 (R.A. Quinn, J. Verville).

Summer. Nonbreeding birds, in many cases juveniles, are usually present along the coast in late June and through July, numbers varying from less than 5 to as many as 200 in the Hampton–Seabrook area 18–19 Jun 1953 (T. Richards), 200 at the coast 21 Jun 2004 (S.R. Mirick, D.B. Donsker), 240 at the coast 23 Jun 2007 (S.R. and J. Mirick), 170 at Hampton 12 Jul 2009 (E.A. Masterson), 145 at Rye 14 Jul 2004 (S.R. Mirick), and 125 at Hampton on 23 Jul 1961 (R.W. Smart, V.H. Hebert). Inland first arrivals in postbreeding dispersal often appear in the first or second week of August, the earliest ones known being 1 at Littleton 23 Jul to 1 Aug 1968 (R.J. Bradley), 1 at Errol 29 Jul 1994 (C.J. Martin), 1 at Gilford 30 Jul 1971 (W.S. Lord), at Hooksett 1 Aug 1967 (J. Galvin), and 1 at Concord 31 Jul 2005 (R.A. Quinn). There are several other inland records in the first 2 weeks of August, also probably due to postbreeding dispersal. Birds at Lake Umbagog 10 Jul 1980 (C.J. Martin) and 18–19 Jul 1987 (S. Absalom, W. Staats, S. Walker), and 2 at Hinsdale 7 Jul 2005 (J. McBride; photo), may have been lingering nonbreeders.

Fall. The earliest coastal migrants may occasionally arrive by late August as 220 found there 26 Aug 1995 (P.D. Hunt). Peak migration period is the last 2 weeks of October and the first 3 weeks of November. Numbers vary widely from year to year, much of the migration often probably passing by offshore, though data to support this are lacking. Peak coastal counts have been the 1949 count of 550, 440 at Rye 27 Nov 1977 (C.A. Federer *et al.*); and 1000+, 200+, and 300+ along the coast respectively 22 and 24 Oct and 8 Nov 1964 (all R.R. Rathbone *et al.*).

Inland, southbound migrants are reported less frequently than in spring, in smaller numbers, and much earlier than at the coast. Earliest known southbound arrivals are 1 at Pleasant Lake, New London, 22 Jul 1995 (R. Vernon) and at least 10 other times before the end of July. Peak counts are 16 at Laconia in the 12 Aug to 12 Oct period 1969 (H.C. Anderson) and 40 at Lake Umbagog 2 Aug 1998 (J. Fox), there being few other counts greater than 5. There are very few inland records after the end of October, the latest of which is 1 at Manchester 14 Dec 1994 (G. Mitchell). Numbers along the coast often drop sharply by late December, the highest known number reported near year-end being 450 at Hampton 1 Jan 1999 (R.S. Aaronian), 65 at Lee/Durham in Little Bay 26 Dec 1993 (CBC), and 75 at Rye 1 Jan 2002 (M. and R.W. Suomala), numbers under 10 being typical.

Winter. Relatively few records after December; there are a few reports from the coast or Isles of Shoals in the first 3 weeks of January, the known later ones being 12 at North Hampton 25 Jan 1974 (E. McCabe *et al.*), 1 at Jeffreys Ledge 27 Jan 1974 (K.C. Elkins *et al.*), 2 at the Isles of Shoals 26 Jan 1975 (L.G. Phinney *et al.*), 1 at Rye 27 Jan 2007 (E.A. Masterson *et al.*), 14 at the coast 2 Feb 1972 (E.W. Phinney), 1 at Rye 27 Feb 1966 (L.G. and E.W. Phinney), and 12 at Hampton Beach 2 Mar 1953 (*fide* V.H. Hebert).

Black-headed Gull *Chroicocephalus ridibundus*

Status. Palearctic species that has become regular in New England since the 1960s and now breeds in Nova Scotia and Newfoundland (Veit and Petersen 1993). Unrecorded in New Hampshire until 1961. Now a casual coastal visitant in late spring and summer and uncommon to rare coastal visitant in fall and winter; rare inland. One winter record for the Isles of Shoals.

1950 to present. Sharp increase in reports from the mid-1960s to date; possibly occurring less often since 2000.

Spring. There are now more than 15 records, the earliest being 1 inland at Rochester from 6 Mar to 11 Apr 2007 (L. and P. Sunderland *et al.*). Most are at the coast in late May and in June. The only other reports that can be considered inland are 1 at Exeter 16–19 Apr 2002 (A.J. Vazano, S.R. Mirick), 1 there 29 Mar to 7 Apr 2003 (M.G. Harvey, R.W. Suomala *et al.*), and 1 at Rochester 1 Apr to 18 May 2008 (D. Hubbard).

Summer. The first known state record was 1 at Hampton 23 Jul 1961 (R.W. Smart). One was at Rye 27 Jun 2004 (S.R. Mirick), 1 at Hampton 12 Jul 1983 (T.J. Bertrand), 1 to 3 birds at Rye 3–11 Jul 2003 (S.R. Mirick *et al.*), 1 at Rye 14 Jul 2004 (S.R. Mirick), 1 at Rye 9–29 Jul 2006 (S.R. Mirick), 1 at Hampton 11 Jul 2009 (L. Medlock *et al.*), and 1 at Seabrook 28 Jul 2009 (L. Kras). One of the 3 birds at Rye in Jul 2003 had been banded at Reykjavik, Iceland, nearly 2400 miles away on 27 Jun 2002.

Fall and winter. From 1965 to date, there have been reports of over 45 birds from the coast between 1 at Seabrook 4 Aug 1991 (S.R. Mirick, G. Robbins *et al.*) and 2 at Hampton 26 Feb 1977 (K.C. Elkins *et al.*); most often in November. A total of 7 birds were found at the coast and at the Isles of Shoals from Dec 1985 through Jan 1986. The first report at Star Island was 27 Jan 1973 (E.W. Phinney *et al.*). Inland reports include single birds at Rochester 17 Nov 2000, 9 Feb 1992, 14 Apr 1996 (all S.R. Mirick); and 2 there 15–30 Nov 2007 (B. Griffith, D. Hubbard), 1 of which likely remained through the winter to 8 Apr 2008 (D. Hubbard). An adult was found inland at Newfound Lake, Bristol, 6 Oct 2010 (J. Lambert).

Remarks. Possibly overlooked before 1961 since it has occurred at Newburyport Harbor, only a few miles south

of the state line, annually since 1942. Since about 1965 the number of records from the coastline of the northeastern United States has sharply increased, a trend reflected in New Hampshire; first found breeding in 1977 in the Magdalen Islands, Canada (Finch 1977).

Little Gull *Hydrocoloeus minutus*

Status. Eurasian species becoming more frequent along the Atlantic coast in spring, fall, and early winter. Now breeding locally in North America. Has been reported increasingly often in the coastal region since the early 1970s; 3 inland reports.

1950 to present. Reports have increased dramatically since first recorded in 1961 though slightly less often since 2000. More frequent in fall.

Spring. Earliest known is 1 inland at Enfield 7 Apr 1997 (P.D. Hunt). Subsequently over 10 records have occurred between extreme spring dates of 1 at North Hampton 16 Apr 2007 (E.A. Masterson) to 12 Jun 2004 at Rye (B. Griffith, M.G. Harvey), mostly in mid-May to early June.

Summer. First known summer record was 1 at Dover 10 Jul 1995 (S.R. Mirick). Other reports are 1 at Hampton 26 Jul 1975 (D. Kirwan); 1 at Rye 26 Aug 1995 (S.R. Mirick, J. Matthews); 1 at North Hampton 30 Aug 1995 (D.B. Donsker); 2 at Hampton 14 Jul 1996 (S.R. Mirick, D.J. Abbott); 1 at North Hampton 20 Jul 1996 (A. Delorey *et al.*); and 1 at Rye 20 Jul 1996 (G. Mitchell *et al.*), the latter 3 reports possibly of the same individual bird. One was at Rye 18–19 Jul 2003 (S.R. Mirick, B. Griffith), 1 at Rye 20 Jul 2004 (S.R. Mirick), 4 at the coast 4–7 Jun 2006 (S.R. Mirick *et al.*), and 1 there 23–29 Jul 2006 (S.R. Mirick). One at Hampton 8–20 Jul 2009 (S.R. Mirick, L. Medlock) and 1 at Rye 25 Jul 2009 (L. Medlock *et al.*).

Fall to winter. First state report was a juvenile at Hampton Harbor 3 Dec 1961 (R.W. Smart, A.C. Borrer, V.H. and R.C. Hebert). A total of over 80 reports were made 1961 to date at the coast, including once at Jeffreys Ledge; extreme dates are 1 at Rye 6 Sep 1995 (S.R. Mirick, R.A. Quinn) and 6 Sep 2003 (S.R. Mirick *et al.*), and 2 adults at Seabrook 4 Jan 1985 (S.A. Fogleman, W.W. Fogleman). Peak counts were 8 at Seabrook 24 Oct 1974 (D.J. Abbott, J.E. Cavanagh), 9 at Seabrook 25 Nov 1979 (D.W. Finch *et al.*), and 9 on the Coastal CBC in Dec 1983. An adult was inland at Laconia 17 Sep–5 Oct 1969 (H.C. Anderson, R.W. Smart, K.C. Elkins *et mult.*; photo).

Laughing Gull *Leucophaeus atricilla*

Status. Irregular spring transient in the coastal region, irregular there in summer, and regular fall visitant in small numbers. Notable recent increase. Casual at the Isles of Shoals. A few inland reports.

Early reports to 1950. Despite the fact that this species

was a regular, though local, breeder on both the ME and MA coasts in 1875–1910; bred in ME until 1944; and increased in MA 1910–1950; this species was unreported for New Hampshire by Dearborn (1903), Allen (1903), or Goodhue (1922). While it may have bred at the Isles of Shoals in precolonial or colonial times, no record of this has survived. The first record that possibly might have been in New Hampshire is 1 at the Isles of Shoals 13 Aug 1929 (Allan 1931), but no state was specified. No reports were submitted to RNEB 1936–1949.

1950 to present. Large increase in reports in this period, especially since 1960 and in fall, though the increase is probably due to intensified field work as well as a large increase in the breeding population north of New Hampshire (see Comment below).

Northbound migration and summer. A total of only 35 birds were reported 1950–1990 along the coast in comparison to at least 137 birds in spring 1991–2009. Extreme dates there are now 2 at the coast 16 Apr 2007 (T. Bronson) to 2 at White and Seavey Islands 29 Jun 1997 (A. Cook, D.L. De Luca *et al.*), the great majority of records being in the last 2 weeks of May. Peak count in spring was 27 at Rye 15 Apr 2006 (S.R. Mirick). Only 3 known records at the New Hampshire Isles of Shoals through 1995: an adult at Star Island 14 May 1972 (D.W. Finch *et al.*), 1 there 13 May 1973 (A.C. Borrer *et al.*), and 1 at White and Seavey Islands 20 Jun 1995 (P.D. Hunt). Since 1990 it has appeared both on the mainland coast and at the Isles of Shoals in small numbers (1–10) regularly from late April through June and July to mid-August; peak count in this period is 27 at Rye 15 Apr 2006 (S.R. Mirick).

Southbound migration. A total of at least 69 birds were reported in fall 1950–1980, reports remained at about the same pace in the 1990s, but the number of reports and of individuals has risen since 2000 as they have in spring. The majority of southbound records are in the last week of August and the first 3 weeks of September. Peak counts are 153 at the coast 4 Sep 2006 and 191 at North Hampton 1 Oct 2006 (both S.R. and J. Mirick). Latest coastal records are 1 at Hampton 3 Nov 1968 (R.W. Smart, H.C. Anderson), a first-winter bird at Portsmouth 14 Dec 1979 (E.W. Phinney), and 1 at Hampton 14 Dec 1991 (P.D. Hunt).

Inland. Four spring records: 1 at Concord 17 May 1969 (ASNH field trip) feeding in a plowed field with Herring Gulls, a surprising 1 far north at Littleton 29–30 Apr 1975 (R.J. Bradley *et al.*), 1 at the Exeter wastewater treatment plant very early on 1 Apr 2006 and 1 at the Rochester wastewater treatment plant 20 Apr 2001 (both S.R. Mirick). Inland fall records are 1 at Spofford Lake 19–24 Sep 1958 (T. Richards); 1 at Bow 21 Nov 1954 (B. Baker); and single birds at the Derry, Rochester, and Exeter wastewater treatment plants in Sep and Oct 2010.

Comment. Since Project Puffin began in 1973 on the ME coast, Laughing Gull populations have increased there dramatically. This species coexists well with Atlantic Puffins, and the larger gulls have been systematically discouraged from the islands where the puffins nest, leading to much higher breeding success for the Laughing Gulls. (S. Kress *fide* R.A. Quinn).

Franklin's Gull *Leucophaeus pipixcan*

Status. Very rare visitor; 6 records of single birds. A non-breeding-plumaged adult was at Portsmouth 25 Nov to 3 Dec 1970 (E.W. Phinney *et mult.*). A breeding-plumaged adult was at Rye Harbor and Jenness Beach 1 Jun 1991 (S.R. Mirick). A molting adult was at Jenness Beach in Rye 12 and 17 Sep 1991 (D.J. Abbott, D. Hughes *et al.*; photo in Petersen 1991). Breeding-plumaged adult in Great Bay at Newmarket 1 Jun 2000 (S.R. Mirick). First-winter bird at Rochester wastewater treatment plant 8–14 Nov 2005 (S.R. Mirick *et al.*). One subadult at the Rochester wastewater treatment plant 24–25 Aug 2009 (M.G. Harvey *et mult.*). See Suomala and Palfy (2005) for summary of records and photos of all but the 2000 and 2009 reports. Two accepted records for VT (C.C. Rimmer pers. comm.), at least 35 records for MA (Veit and Petersen 1993, BO database 2010), and at least 8 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Mew Gull *Larus canus*

Status. Vagrant, probably from Europe. One record of a bird of undetermined race seen by a single experienced observer at the Rochester wastewater treatment plant 18 Apr 2005 (R.P. Fox). A juvenile of the nominate race *L. c. canus* at Exeter 2 Mar to 3 Apr 2010 meticulously studied and photographed (S.R. Mirick *et mult.*; photos NHBR Vol. 29 [1]: 58–59). Two records from ME (ME-BRC website, P. D. Vickery pers. comm.) and over 60 records for MA (Veit and Petersen 1993, BO database 2010).

Ring-billed Gull *Larus delawarensis*

Status. Regular spring and fall migrant at the coast in small numbers, small numbers regularly present also in both summer and winter. Only occasional at the Isles of Shoals. Inland a regular spring and fall migrant, rarely in numbers over 200 birds. Unknown to breed. Greatly increased since 1950, particularly inland.

Early reports to 1950. The first possible record for the state is 1 reported by Webster (1900a) as captured inland at Campton Village 25 Nov 1898, and kept in captivity for at least a year. But Allen (1903) says he was told “that the identification is in doubt” so the record, while possibly correct, is not accepted here. Dearborn (1903) called it “a spring and fall migrant” in the coastal region, this

being the first certain reference to its occurrence in the state. Goodhue (1922) also considered it “a regular migrant along the coast.” Shelley (1932e) recorded the first known summer records: 1 at Hampton Beach 17 Jul 1932 and 4 at Portsmouth the next day (both L.O. Shelley, J.P. Melzer). Several more coastal records were reported in the late 1930s and in the 1940s, but the first accepted inland record is 1 at Meredith 14 May 1948 (T. Richards).

At the Isles of Shoals, the first known record is 1 at Duck Island, ME, 8 Jul 1930 (Allan 1931, Jackson 1947). Shelley (1934b) recorded a few in the Isles of Shoals area in the 20–26 Jul 1933 period, the exact state not specified but probably in ME as he was banding gulls on Duck Island at the time.

1950 to present. Significant increase in this period, especially in the interior where it is sometimes reported more often and in greater numbers than at the coast. Some suggestion of lower winter numbers inland as landfills have closed.

Spring. Earliest coastal transients are suspected by the third week of March but cannot be told with certainty from wintering birds. Peak coastal migration period is the month of April and the first week of May, peak count in this period being 1000 roosting on Great Bay 15 Apr 1997 and 600 there 31 Mar 1998 (both S.R. Mirick), though such numbers have only appeared since 1990. Latest transients are thought to have passed through by the third week of May but cannot be distinguished with certainty from summering birds. An unusual late spring count was as high as 250 at Newmarket on Great Bay 2 Jun 1997 (S.R. Mirick). No spring records for the Isles of Shoals are known.

Inland, peak migration period is the same as at the coast, though there is great variation from year to year; early counts were 75 at Concord 15 Mar 2006 (R.A. Quinn) and 50 at Manchester 18 Mar 2008 (E.A. Masterson). In most years counts in the 20–35 range are routine along the 2 major river valleys and in the Lakes Region, but 4 years stand out in which much higher numbers have been noted in the Connecticut River valley: 100+ at Littleton 1 May 1961 (R.J. Bradley *et al.*), 150+ there 2 May and 250+ there 9 May 1963, 150–175 there 30 Apr 1969 (all R.J. Bradley), and 430 Hinsdale to Walpole 3 Apr 2008 (E.A. Masterson). In some of these years much higher numbers than usual were also noted at other inland localities. Twenty-three were still at Littleton 27 Jun 1995 (R.J. Bradley).

Summer. Mostly young birds are regularly present in the coastal region through June and July, peak count being 400 at Hampton 31 Jul 2005, 250 on Great Bay 2 Jun 1997, and 200 at Great Bay 12 Jul 1997 (all S.R. Mirick); postbreeding dispersal begins in early August, some birds probably originating in recently expanded breeding colonies in ME and the Maritime provinces of Canada.

Inland the first known early summer record was 1 at Squam Lake 8–28 Jul 1955 (A. Lincoln *et al.*), but by the late 1970s inland occurrence was routine at several locations, most dramatically at Littleton in 1976: 6 adults 3 Jul, 2 adults and 6 juveniles 18 Jul, 38 juveniles 22 Jul, and 50 there 12 Jul 1977 (all K.C. Elkins). The first known record for Lake Umbagog was 1 there 29 Jun 1959 (V.H. and R.C. Hebert), Brewster (1924) having no certain records. Two were at Pittsburg 12 Jul 1980 (E.W. Phinney) and 80 were at Littleton 18 Jul 1998 (R.J. Bradley). Postbreeding dispersal usually results in a significant increase in inland numbers by mid-August to early September, examples of high counts being 40+ at Laconia 27 Aug 1978 (C. Casas), 70 at Littleton 30 Aug 1979 (R.J. Bradley), 92 at Littleton 14 Aug 1980 (R.J. Bradley), and 168 at Littleton 18 Aug 1976 (R.J. Bradley).

Fall. Earliest coastal fall migrants are suspected by early September, but peak coastal migration period is mid-October to mid-November. Highest known counts in this period are 600 at Auburn 23 Oct 2009 (E.A. Masterson), 450 at Newmarket 11 Nov 1999 (S.R. Mirick), and 470 at Durham 4 Nov 2003 (R.W. Suomala). Offshore records include 3 at Star Island 28 Sep 1999 (R.W. Suomala *et al.*), 1 there 1 Oct 1967 (R.W. Smart), and single birds at Jeffreys Ledge 2 Oct 1977 (E.W. Phinney *et al.*) and 13–14 Nov 1976 (D.W. Finch).

Inland peak migration period is the same as at the coast. Peak inland counts are 200+ on Lake Winnisquam 13 Sep 1960 (V.H. Hebert *et al.*), 410 at Manchester 7 Oct 2008 (E.A. Masterson), and 400 at Rochester 31 Oct 2006 (S.R. Mirick). Late fall inland reported numbers are highly variable as in spring, peak known count being 750 at Rochester 5 Dec 2007 (T. Bronson). Numbers in the 100+ range have become routine at favored locations such as water treatment plants in recent years. The majority of birds have gone by mid-December, both from the coast and from most inland areas.

Winter. Some usually winter at the coast, the highest numbers noted being 451 on 17 Dec 1994 (CBC), 400 at Lee/Durham 26 Dec 1994 (CBC), and 235 at Exeter 19 Feb 2006 (T. Bronson), usual coastal numbers being in the 25–75 range. Two were at the Isles of Shoals 20 Dec 1967 (CBC), 2 there on 23 Dec 1978 (E.W. Phinney *et al.*), 2 there 3 Jan 1968 (L.G. Phinney *et al.*), and 1 there 1 Feb 1968 (L.G. Phinney *et al.*).

Inland, the first known winter record was 1 at Laconia 27 Dec 1951 (CBC), and birds have been found there most winters since, the high count being 22 on 27 Feb 2005 (H.C. Anderson). One hundred twenty-six were at Nashua/Hollis 31 Dec 1994 (CBC). Highest count at Concord on the CBC was 182 in 1996 but counts there have averaged only 27 in 2003–2010 (*fide* R.A. Quinn) as landfills have closed; most birds leave when fresh waters freeze. Latest records known for north of the White

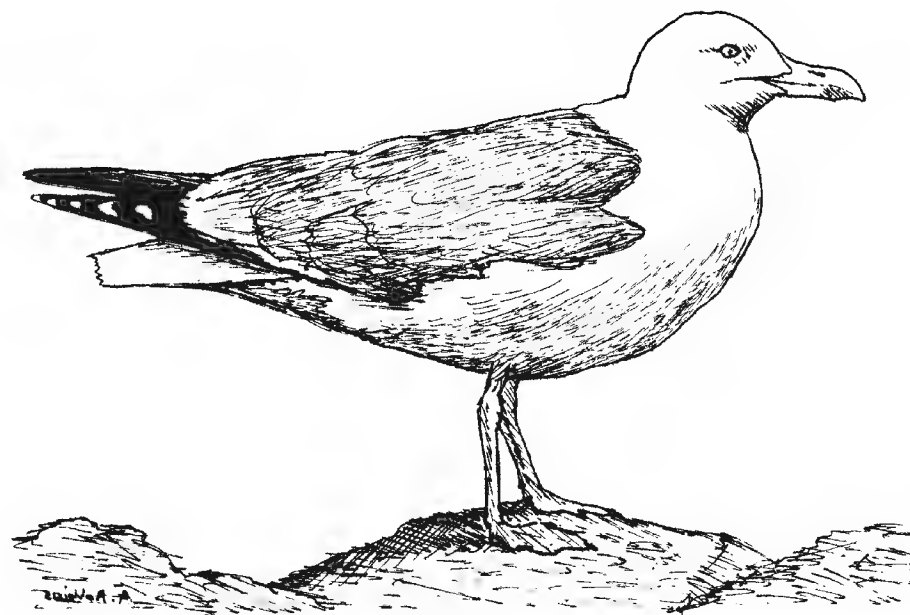
Mountains are 1 at Errol 22 Dec 1966 (CBC), 2 at Littleton 27 Dec 1964 (CBC), and 1 at Pittsburg 29 Dec 1953 (F.T. Scott). Aside from these and a record for Hanover 26 Feb 1961 (J.E. Cavanagh), all other winter inland reports are from the Lakes Region or the Merrimack River valley, examples being 1 at Manchester 5 Feb 1974 (A.E. Ames) and 5 at Manchester 17 Feb 2007 (E.A. Master-son).

Herring Gull *Larus argentatus*

Status. Common to abundant year-round resident in the coastal region. Regular spring and fall migrant and both a summer and winter resident inland. Probably bred formerly and may still occasionally at Lake Umbagog but otherwise known to breed primarily at the Isles of Shoals, Lake Winnepesaukee, and at a few other inland locations. Greatly increased since 1900 and especially from 1950 to the 1970s, after which there has been a sharp decline, especially inland as landfills have been closed.

Early reports to 1950. First reported for the state by Belknap (1792) who listed the “Gray Gull, *Larus fuscus*,” using the scientific name now in use for Lesser Black-backed Gull which it closely resembles. The next published records are inland ones. Samuels (1867) saw some at Lake Umbagog, at least a few of which were surely in New Hampshire though he did not specify in which state. Brewster (1924) found it a regular but uncommon summer resident at Lake Umbagog in 1871–1909 “almost constantly present from early spring to late autumn.” Brewster never found a nest there himself but reports that it probably bred in the general area nearly every year. The 1 New Hampshire breeding locality identifiable today from Brewster’s account is a “small, rocky island off the entrance to Black Island Cove” where birds nested “several times...between 1870 and 1875.” This is also the first recorded breeding of this species in the state. Brewster recorded birds “late in May and early in June, 1897, about Great Island and Leonard’s Pond” which he felt “... were almost certainly breeding or preparing to breed in both localities...but [he] searched for their nests without any success.”

Bolles (1893b) noted it as occasional after easterly storms at Chocorua Lake, and the first arrival of the season at Concord was noted 7 Apr 1889 (Anonymous 1889a). Howe (1901–1903) reported 2 flying over Newfound Lake 3 Sep 1901 and 1 at Squam Lake 6 Sep 1902. Dearborn (1898) said it “occasionally appears during spring and fall for brief passing visits” in Belknap and Merrimack Counties, noting particularly a specimen shot at Webster Lake then possessed by a Mr. Irving Hayes of Franklin, and 1 Dearborn saw at “Little Bay near East Tilton in October, 1896.” Dearborn (1905) listed it for Northfield but without providing a date. Allen (1903) recorded 20 on the Merrimack River at Nashua 10 Feb



1900, this being the first published inland winter record for the state. Wright (1911) apparently knew of none for the adjacent part of the Connecticut River valley but listed 3 records by R. Marble at Saco Lake in Crawford Notch: 3 on 25 Sep 1907, 1 on 25 Sep 1908, and 1 on 19 Sep 1910. Curiously, Marble (1927) mentioned only the 1908 record. Thayer (1912) recorded it in small flocks at Dublin Pond in fall.

The above are all the known published reports for inland occurrences of the Herring Gull up until 1910. This suggests that the species was irregular to regular inland in small numbers on migration in 1870–1910, perhaps slightly more numerous in fall, probably increasing in that interval, and breeding irregularly at Lake Umbagog. From 1910–1950, it appears to have increased more rapidly inland as best shown for the Concord region by White (1924b) who reported that it then appears “more or less often over the Merrimack, when the river was not frozen over.” He presumed that protection on its breeding grounds was “probably reflected in the appearance of more frequent visitants here than were formerly observed.” Thirteen years later, White (1937) reported that there had been many records “from 1928 on,” that it was then regularly resident on the river in winter, and that it was a regular spring and fall transient. Foster (1936) noted it wintering at Manchester, and Shelley (1936b) noted migrants at Westmoreland on the Connecticut River in Mar and Apr 1935.

At the coast, Dearborn (1903) called it a common fall migrant, winter resident, and spring migrant, arriving “early in October, and remain[ing] till the last of April.” His latest spring record was 20 Apr 1898. He made no mention of its presence in summer, though occasional birds must have been present since it was then breeding at the Isles of Shoals. Allen (1903) called it a “common spring and fall migrant and winter resident along the coast...”

At the Isles of Shoals, Thaxter (1870) mentioned seeing

newly hatched chicks at Appledore, ME. Though there is no definite record for this era, it seems likely that the species was also nesting on 1 or more of the New Hampshire islands at the same time or at the very least was a summer resident there. Allan (1931) said it was present there year-round. Eaton (1934) reported on extensive banding done at Duck Island, ME, in 1929–1932 from which he had 84 recoveries which were concentrated in 2 areas: northern New Jersey and the Gulf coast from western Florida to Galveston, Texas. Extreme distribution records from this colony were recoveries at Centerville, Iowa; Hopetown, Bahamas; Coahuila, Mexico; and Ketch Harbor, Nova Scotia. Shelley (1934k) reported a bird banded at Duck Island 20 Jul 1933 that was shot 10 Dec 1933 at Bocas del Toro, Panama, about 1300 miles distant.

Wright (1937a) called it “the most abundant bird by far at the Shoals.” He recorded that “several thousand” breed on Duck Island, “some” on Smuttynose, “one or two pairs” on Lunging, and 1 unsuccessful pair tried to breed on Appledore in 1935 and 1936. In 1934 and continuing almost annually until 1948, population control measures were attempted by the USFWS, first by puncturing eggs and then by spraying them, all along the New England coast including the Isles of Shoals. Jackson (1947) stated that in “spite of [these] control measures, the species is extremely abundant...In 1930 none were nesting on Smuttynose, all being confined to the colony on Duck Island. At present there are over a thousand nesting birds on Smuttynose and perhaps five thousand on Duck.” While much of the above relates most specifically to the populations on ME islands at the Shoals, those birds nesting on New Hampshire islands can be considered part of the same colony which increased sharply 1930–1947.

1950 to present. A further substantial increase, both inland at all seasons and as a breeder at the Isles of Shoals and Lake Winnepesaukee, followed by a decline in breeding numbers since the early 1970s and in wintering numbers by the mid-1990s, the latter primarily due to landfill closings. Breeding population listed as declining by Hunt (2009b).

Spring. Migration at the coast probably begins as early as the last 2 weeks of February but cannot be detected with certainty because of the presence of wintering birds. Peak costal migration period is typically the month of March and the first 2 weeks of April. Inland, peak migration period is often later and depends on when the ice goes out of the rivers and lakes, typically being the first week of April through the second week of May. Earliest known record of a presumed migrant north of the White Mountains is 1 at Littleton 2 Mar 1972 (M.L. Fuller), and the first migrants have usually reached the Connecticut River valley in Cheshire County by the third or last week

of March. Peak inland spring count is 360 at Littleton 7 May 1972 (R.J. Bradley).

Summer and breeding. Systematic counts were kept at the Isles of Shoals 1972–1989 (Borrer and Holmes 1990); in 1972 Borrer estimated 8400 pairs on the ME islands and about 750 pairs on the New Hampshire islands. In 1976 the comparable totals were about 4000 on the ME islands and 250 in New Hampshire. In 1980 the ME total was about 3625 pairs and about 375 for New Hampshire. In short, from a rough estimate of about 1500 pairs on all the Shoals islands in 1930, the population rose to about 3000 pairs in 1947 to over 9000 pairs in 1972, back down to 4250 pairs in 1976 and 4000 pairs in 1980, followed by a further decline to 2969 in 1989 and fewer than 2100 pairs by 1995 (Ellis and Good 2006). The decline probably is traceable to the decline in the local fishing industry, closing of landfills, and contemporaneous increase in breeding numbers of Great Black-backed Gulls. The introduction of Raccoons on Star Island by the winter of 2001–2002 resulted in the elimination of breeding Herring Gulls on Star, Smuttynose, and Appledore Islands by 2003. The Raccoons were trapped out in 2004 (Ellis *et al.* 2007), but breeding by gulls has not resumed on those islands; the colony on Duck Island, ME, remains robust. In 1994 and 1995, the number of Great Black-backed Gulls breeding on the Shoals islands exceeded the number of Herring Gulls breeding there for the first time (Ellis and Good 2006).

Inland, breeding was confirmed at Lake Umbagog in summer of 1980 (C. Miles) for the first time since about 1870, though small numbers are regularly present through the season there and breeding may have occurred sporadically. In recent years, birds have been found regularly and commonly at this season in the Lakes Region, along the Merrimack River valley and slightly less commonly in the Connecticut River valley. Representative high counts are 42 at Lee 21 Jul 1963 (O. Earle), 96 at Manchester 26 Jun 1966 (R.W. Lawrence), 56 at Gilford 19 Jul 1969 (W.S. Lord), 684 on Lake Winnepesaukee in Jul 1971 (T. Richards *et al.*), and 1000+ there 20 Jul 1972 (NHFG Survey). As these last 2 counts suggest, the numbers present in the Lakes Region in summer grew steadily and rapidly 1960–1975, but are thought to have dropped sharply by about 1990. While breeding inland was suspected for several years, it was first confirmed at Lake Winnepesaukee in the spring of 1973 when about 30 pairs were found at 1 site (*fide* R.P. Fox), though the appearance of the colony and its size suggest that it may have been used for at least a year or 2 prior to that date; breeding there since has not been documented. Small numbers of this species occasionally nest in coastal salt marshes; up to 54 pairs nested on the roof of a mill in Manchester in 1984; and during 1981–1986 at Concord, Conway Lake, Second Connecticut Lake, and Squam

Lake (Foss 1994). Five pairs nested on the roof of a building in Manchester in Jul 2007 (S. Brown) but there are no reports from there since. Even though BBS data do not include any breeding colonies, annual population trend declines approaching 5% per year in both 1966–2009 and 1999–2009 have been recorded (Appendix IV).

Fall and winter. Earliest coastal migrants are suspected by the second week of August and postbreeding dispersal of adults and young usually occurs in the last 2 weeks of August, frequently accounting for increases in inland numbers at this time. Peak period of coastal migration is the month of September and the first 2 weeks of October. Examples are 3850 at the coast 13 Oct 1968 (R.W. Lawrence) and a “very rough estimate” of 16,000+ at Seabrook 2 Nov 1971 (E.W. Phinney). However, peak numbers do not usually collect at favored localities until later in the season. By mid- to late December numbers become concentrated at favored places at the coast. Examples are 7000 in the coastal region 18 Dec 1971 (A.C. Borror *et al.*) and 13,000 at the Isles of Shoals 23 Dec 1978 (E.W. Phinney *et al.*). The increase in the population followed by a moderate decline is shown by the following selected statewide CBC totals: 1587 in 1953; 6119 in 1972; 9698 in 1978; 12,100 in 1991; 15,853 in 1995; 23,000 in 1997; 11,958 in 2002; and 9455 in 2009. The decline since about 2000 probably reflects the closing of several landfills; notably the ones in Manchester, Concord, Bethlehem, and Kingston; and active discouragement at Nashua. In general, coastal numbers have dropped sharply since 1995.

Inland, peak migration period is from the third week of September through October, though peak numbers do not usually collect until later as at the coast. Representative high counts at selected localities are 1000 at Success 28 Oct 2005 (R.A. Quinn *et al.*), 80 at Chesterfield 17 Nov 1964 (T. Richards), 396 at Laconia 22 Nov 1969 (H.C. Anderson), 3000 at Rochester 19 Dec 2006 (M.G. Harvey), 1163 at Laconia 31 Dec 1972 (K.C. Elkins *et al.*), 2500 at Auburn 6 Nov 1978 (T. Richards), and 3453 on the Keene CBC 18 Dec 1993. Unusual late record for north of the White Mountains is 1 at Pittsburg 28 Dec 1953 (CBC). The largest inland concentration in the state since 1995 has been at the Rochester landfill where numbers are present all year: 8000 on 8 Apr 2003 and 5000 there 17 Jun 2005 (both S.R. Mirick).

After December, regular at the coast and at many inland locations in the Lakes Region and along both major river valleys. Numbers are dependent in part on the severity of the weather, birds often withdrawing to the coast or farther south in extremely cold seasons. High winter counts inland other than at the Rochester landfill and water treatment plant are 175 at Chesterfield 2 Jan 1958 (T. Richards) and 228 at Laconia 2 Jan 1978 (K.C. Elkins *et al.*). The only known midwinter records north of the

White Mountains are 9 at Littleton 28 Jan 1973 (E.A. Emery) and 3 there 28 Feb 1976 (M.L. Fuller).

Taxonomic Note. See Appendix I for reports of presumed hybrids of this species with Glaucous Gull.

Thayer's Gull *Larus thayeri*

Status. Very rare winter visitor. One found at the Rochester wastewater treatment plant 28–30 Dec 2005 (S.R. Mirick *et mult.*; photos in Palfy 2006), and another found there both 24 Nov 2008 (B. Griffith *et al.*; photo NHBR 27 [3]: 17) and 16 Dec 2008 and 12 Jan 2009 (B. Griffith, J. Lambert); 1 of the latter records was a first-winter bird, the other an adult. One reported at the Rochester wastewater treatment plant 30 Nov and 2 Dec 2009 (B. Griffith, L. Kras).

Taxonomic note. Despite its recognition as a full species by the AOU (1998), there is a significant body of ornithological opinion that it should be treated as a race of Iceland Gull (e.g., Godfrey 1986) which exhibits a steadily darkening plumage cline from northern Europe to the western Canadian Arctic. In the opinion of many, it is indistinguishable from many individuals of the *L. g. kumlieni* race of Iceland Gull, an opinion the present authors share. In MA, 1 specimen and 5 other possible sight records (Veit and Petersen 1993) and occasional other sight records since 1993 (BO database 2010); considered hypothetical for ME (ME-BRC website).

Iceland Gull *Larus glaucoides*

Status. Regular spring and fall migrant and winter resident in small numbers at the coast, the Isles of Shoals, and at a few places inland. One summer record. Significant increase since 1960.

Early reports to 1950. Unknown in New Hampshire until comparatively recently, as neither Dearborn (1903) nor Allen (1903) had any reports. The first known record for the state is 1 first seen in the distance at Seabrook 27 Jun and 30 Jul 1930 (F.B. White) but not surely identified until it was carefully studied at close range there by F. B. Conkey and G. L. Perry on 24 Aug 1930 (May 1930c). One was found at the coast 17 Nov 1946 (B. Baker), and Richards (1972–1975) reported the first known inland record at Laconia 7 Jan to 23 Feb 1949, a second bird also present 23 Feb (T. Richards). One at Opechee Bay, Laconia, 23 Dec 1949 (T. Richards).

Griscom and Snyder (1955) reported that this species was very rare in MA in winter at least until 1900 but that it had since increased sharply so that it began to outnumber the Glaucous Gull by the early 1940s. Palmer (1949) stated that it outnumbered the Glaucous Gull “about two to one” in ME by 1949. This population increase was

probably also reflected in New Hampshire, but there are no records to prove that.

1950 to present. A large increase in reports during this period, especially since 1960 and particularly inland, possibly due to increased observer activity. At present it seems slightly more numerous than Glaucous Gull in the state. As is the case with the latter species, it often arrives inland in fall earlier than at the coast and lingers inland later in spring.

Fall. Earliest known coastal arrival is 1 at Hampton 17 Oct 1951 (B. Baker *et al.*), next earliest report being 1 at Rye 24 Oct 1976 (D.J. Abbott). Earliest inland records are 1 at Rochester 21–25 Oct 2008 (S.R. Mirick), a second-year plumaged bird at New Hampton 1 Nov 1961 (V.H. Hebert), and 1 at Monroe 3 Nov 1954 (I.F. Hunt). General fall arrival is highly variable from year to year, the first reported birds of the season appearing anywhere from mid-November to the second or third week of December, either inland or at the coast. As with Glaucous Gull, a significant part of the southbound migration probably passes offshore. High coastal fall count is 10 off Portsmouth 16 Nov 1975 (L.G. Phinney *et al.*); 1 was at Star Island 17 Nov 1973 (D.W. Finch *et al.*). Three possible migrants at Berlin 5 Dec 2000 (R.A. Quinn). High inland fall count is 8 at Rochester 6 Dec 2002 (S.R. Mirick). Latest known record of a probable migrant north of the White Mountains is 1 at Littleton 29 Nov 1963 (H.C. McDade).

Winter. Regular inland in winter at least from the 1970s to about 2000 after which numbers reported have fallen as landfills have been closed. When regular, most often found at or near Laconia in the Lakes Region and at openings in the Merrimack River and at municipal landfills from Concord south to the MA state line. The high inland winter counts are 8 at Manchester 28 Jan 1979 (M.T. Martin) and 20 at Rochester 25 Jan 2008 (B. Griffith). The few known records for the Connecticut River valley in winter are 1 at Chesterfield 4–5 Jan 1958 (T. Richards), 1 at Bethlehem 19 Jan 1995 (E.A. Emery *et al.*), and 1 there 20 Feb 1999 (P.D. Hunt, M. Krenitsky *et al.*). Unusual winter reports are 1 at Tuftonboro 23 Jan 1972 (W.S. Lord) and 1 that wintered at the Connecticut Lakes Dec 1952 to Mar 1953 (F.T. Scott).

A few regularly winter along the coast and at the Isles of Shoals. The highest known count for this season is 12 at Isles of Shoals 4 Jan 1976 (L.G. Phinney *et al.*). Presence of wintering birds obscures the onset of spring migration, but the first northbound migrants are suspected by the last week of February.

Spring. Peak migration period both inland and at the coast is typically the last 3 weeks of March and the first week of April. Since 1960, about as many individuals have been reported in spring from inland localities as from the coast, though data from the Isles of Shoals at this season

are lacking. Peak spring count is 5 at Concord 6 Mar 1982 (R.A. Quinn) and 5 at Rochester 22 Mar 2007 (S.R. Mirick). Latest inland spring records are 1 at Rochester 27 May in 2003 and in 2005 (both S.R. Mirick), and latest coastal records are 1 at New Castle 26 May 1994 (D. and K. Hughes) and 1 at White and Seavey Islands 27 Jun 2004 (M. Barney *et al.*). Since the closing of the Concord landfill, overall numbers of gulls present there in spring have dropped sharply (*fide* R.A. Quinn).

Taxonomic note. Confirmed sight records only exist for the *L. g. kumlieni* race, but the *L. g. glaucoides* race should be expected. No extant specimens of either race from the state are known.

Lesser Black-backed Gull *Larus fuscus*

Status. Eurasian species reported increasingly often since first discovered. Uncommon but regular migrant and winter resident, principally at the coast. Uncommon inland except at Rochester. Rare but increasingly common summer visitor.

Reports since 1950. The first record for New Hampshire was 1 at Jeffreys Ledge 16 Nov 1975 (D.W. Finch, R. Veit, E.W. Phinney, T. Burke *et al.*). The next 4 reports were 1 at Rye 30 Dec 1983 (E.W. Phinney), an adult photographed at Rye 31 Dec 1986 (S.R. Mirick), and 1 at Rye 31 Jan 1992 (D. Hughes). By 1995 it began to appear regularly at the coast, and by 2009 there were reports of over 35 birds which had occurred in every month from August to June. There are more reports from November through January than at other seasons of the year, believed to be southbound migrants in late fall and wintering birds; a slight increase of reports in late March and early April suggests northbound migration; also 3 at Concord 16–25 May 2006 (R.A. Quinn *et al.*). Extreme dates were from 7 Aug 2008 at Dover (D. Hubbard) to 7 Jun 2005 at Rye (S.R. Mirick). The first known midsummer record was an adult at Rye 24 Jul 2007 (S.R. Mirick), possibly the bird that nested at Appledore Island, ME, that summer (see Appendix I).

The first inland report was at Manchester 10 Jan 1995 (P.D. Hunt), and extreme dates inland are now from 23 Aug 2001 at Rochester (S.R. Mirick) to 25 May 2006 at Concord (I.C. MacLeod). It has also been reported from several other inland localities, including in Coos County, such as at Enfield (1995), Berlin (1996), Somersworth (1999, 2000, 2006), and the first known from Lake Umbagog 30 Sep 2003 (R.A. Quinn *et al.*). Through 2009, at least 20 birds had been reported at the Rochester wastewater treatment plant alone, far more than at any other locality, peak known counts there being 5 on 20 Apr 2001 (S.R. Mirick) and on 4 Jan 2007 (M.G. Harvey).

Taxonomic note. Of the 3 described races of this species, the only 1 documented so far in New Hampshire is *L. f.*

graellsii (photos), though the race *L. f. intermedius* with a darker black mantle has been observed in MA. See Appendix I for records of 3 hybrids between this species and Herring Gulls.

Slaty-backed Gull *Larus schistisagus*

Status. Vagrant from the Pacific northwest. Three records, all single birds at the Rochester wastewater treatment plant and most well photographed: 23–27 Dec 2003 (S.R. Mirick, D.J. Abbott, D.W. Finch, M.G. Harvey *et al.*), 2 Jan 2007 (S.R. Mirick, M.G. Harvey *et al.*), and presumably the same bird several times to 18 Jan 2007 (S.R. Mirick *et mult.*). Color photo on back cover of NHBR 25(4). Three records for MA 2007–2009 (BO Database 2010), 1 for VT in 2011 (C.C. Rimmer pers. comm.), and 1 record for ME (P.D. Vickery pers. comm.).

Glaucous-winged Gull *Larus glaucescens*

Status. Vagrant from the Pacific northwest. One at the Rochester wastewater treatment plant 10 Jan 2009 (S. Young, D. Hubbard; photo NHBR 27 [4]: 12). The nearest other locality for which it has been reported is of 1 photographed (J. Clarke) at St. Johns, Newfoundland, 21 Mar 2006; has also occurred as a vagrant in Denmark, Norway, United Kingdom, Switzerland and Morocco. The New Hampshire record is the southernmost on the Atlantic coast.

Glaucous Gull *Larus hyperboreus*

Status. Rare spring and fall migrant and uncommon winter resident in very small numbers at the coast, at the Isles of Shoals, and at a few favored localities inland. Three summer records.

Early records to 1950. The first report for the state is that of Allen (1903) who called it a “rare winter visitant” and cited a “bird shot at Hampton...came into the possession of Mr. N. Vikary, the late taxidermist, about February 20, 1886” (*fide* W. Brewster). Dearborn (1903) said that it was a winter visitor that “rarely falls into the hands of local collectors,” he being only able to find 1 shot by S. A. Shaw in May of a year then lost, presumably at Hampton but not certainly in New Hampshire. Allan (1931) reported 1 at the Isles of Shoals on the remarkable date of 28 Jul 1929, the exact state not specified and no other details provided. One was at Exeter 27 Jan 1940 (P. Nash). Richards (1972–1975) reports the first known inland record for the state, 1 at Laconia 5–23 Feb 1949 (T. Richards); different birds were at the same place 7 Mar, 22 Mar, 2 Apr, and 2 on 19 Apr 1949 (all T. Richards).

Griscom and Snyder (1955) note that in MA it was regarded as a rare winter visitor until the 1920s. From then until 1945 it was fairly common but then declined

sharply until 1955. While such population trends may have been reflected in New Hampshire, we have no data to prove that.

1950 to present. Major increase in reports 1960–1990 after which the number has dropped significantly. A significant increase in reports, especially inland where it now sometimes arrives earlier in fall and lingers later in spring than at the coast, though inland reports have dropped sharply since 2000 except at the Rochester wastewater treatment plant, doubtless due to closing of landfills elsewhere.

Fall. Earliest known arrivals are 1 in Hampton 4 Nov 1989 (P.D. Hunt), 1 at the Isles of Shoals 8 Nov 1970 (R.W. Smart), and 1 at Jeffreys Ledge 12 Nov 1977 (D.W. Finch). Earliest inland records are 2 at Littleton 17 Oct 1965 (H.C. McDade), next earliest being a second-year plumaged bird at Chesterfield 5 Nov 1959 (T. Richards) and 1 at Lebanon 5 Nov 1989 (P.D. Hunt). General fall or early winter arrival is extremely variable, the first bird of the season sometimes not being reported either at the coast or inland until the first or second week of December. The bulk of the southbound migration is believed to pass offshore. Highest known inland count is 5 at Laconia 30 Dec 1964 (V.H. Hebert *et al.*).

Winter. A few regularly winter in the coastal region, favored localities being harbors, water treatment plants or rocky areas more often than sandy shores. Highest known count for this season is 6 at Jeffreys Ledge 30 Jan 1972 (R.W. Smart *et al.*). Inland reports are concentrated at areas of open water or dumps, particularly at or near Laconia in the Lakes Region, along the Merrimack River from the Concord area south to the MA state line, and at the Rochester wastewater treatment plant. The only known winter records for the Connecticut River valley are 1 at Littleton 2 Jan 1971 and 1 at Lisbon 7 Feb 1999 (both R.J. Bradley), and 1 at Hinsdale 10 Jan 2005 (E.A. Masterson). Highest inland winter counts are 4 at Laconia 1 Jan 1972 (V.H. Hebert), 10 at Rochester 12 Jan 2009 (B. Griffith *et al.*), and 6 at the Manchester landfill early Feb 1976 (G.W. Lawrence). Due to the presence of wintering birds, onset of spring migration cannot be determined precisely, but earliest northbound transients are often suspected in the first week of March, an example being 4 at Laconia 5 Mar 1965 (R.W. Smart, V.H. and R.C. Hebert).

Spring. Peak migration period both inland and at the coast is typically the last 2 weeks of March and the first 2 weeks of April. Counts of 2 in a day in this period were routine until the 1970s, and 3 were found in the Lakes Region as late as 18 Apr 1961 (R.W. Smart, V.H. Hebert). Seven at Concord 6 Mar 1982 (R.A. Quinn) is the highest known inland spring count. Earliest record north of the White Mountains is 1 at Littleton 28 Mar 1971 (R.J. Bradley *et al.*). In recent years, several times as many in-

dividual birds have been recorded in spring from inland localities as from the coastal region. Latest known reports from the Isles of Shoals are 1 at Star Island 11 May 1975 (K.C. Elkins *et al.*) and 1 there 1 Jun 2008 (E.A. Master-son *et al.*). Latest mainland coastal report is 1 at Seabrook 24 May 2008 (T. Bronson *et al.*), and latest inland reports are 1 at Littleton 10 May 1975 (R.J. Bradley) and 1 there 9–12 May 1972 (L.M. Fuller, R.J. Bradley *et al.*). Unusu-ally late inland stragglers were 1 at Nashua 20 May 1995 (B. and M. Harris *et al.*) and at Wolfeboro 31 May 1967 (R. Bollingier). Numbers reported at the coast, and espe-cially inland, have dropped very sharply since 2000, doubtless due to closing of many landfills.

Summer. Other than the 1929 report, the only known other records are 1 at Seabrook 16 Aug 2005 which lin-gered until 25 Sep (E.A. Masterson *et al.*), 1 at Pittsburg 21 Aug 1975 (P.E. Nugent), and 1 at Seabrook 11 Jun to 16 Jul 2004 (S.R. Mirick *et mult.*).

Taxonomic Note. See Appendix for reports of presumed hybrids of this species with Herring Gull.

Great Black-backed Gull *Larus marinus*

Status. Common to abundant resident year-round in the coastal region and at the Isles of Shoals. Regular spring and fall migrant in the interior, a regular winter resident at favored inland localities, and a regular and common nonbreeding summer resident at a few inland locations. Only known breeding area is a few islands in the Isles of Shoals. Great increase since 1900.

Early reports to 1950. First listed by Belknap (1812) as the “Eagle Gull, *Larus marinus*.” It was probably rare then, found mostly in winter. Stearns (1887) called it common on the coast in winter, the first specific state report. Dear-born (1903) described it as a regular, but not abundant, winter resident in the coastal region, arriving “from the north as early as the middle of October” and remaining “through the winter...[m]ost of the fall birds are young in the brown plumage, but adults are not rare.” Allen (1903) called it a “common winter resident on the coast.” Goodhue (1922) clearly indicated that it was not as com-mon then as it is today. White (1932b) recorded that its numbers at Seabrook had “been as usual very few, noted April 7th, June 6th, October 24th and November 12th” in 1931, on only 4 of the 11 trips he made there that year. Nine were at North Hampton 20 Apr 1946 (A. and M. Argue) and the first known inland report was 2 at Hins-dale 2 Jan 1949 (R.H. MacArthur *et al.*).

At the Isles of Shoals, Jackson (1947) recorded that “Three pair...were breeding on Duck Island [ME]...in 1928. They have been consistent residents during the summer and the number has increased to 40 or 50 pair [by the mid-1940s]. They are regularly nesting with the colony of Herring Gulls on Duck Island.” Wright (1937a)

reported about 10 pairs on Duck Island in 1935 and about 15 pairs there in 1936. The first year in which this gull nested in New Hampshire is not known, but it was probably sometime in 1936–1950.

1950 to present. A huge increase in this period, especially as a migrant and as both a winter and summer resident inland and as a breeder at the Isles of Shoals, though numbers have been dramatically lower since 2000, espe-cially inland, due to the closing of several landfills.

Spring. Migration at the coast may begin as early as the last 2 weeks of February, but the peak numbers of mi-grants pass northward from early March into April; a typical count at this period is 50 on 20 Mar 1980 at Rye (A.E. Ames). By early May the breeding population has arrived at the coast. Two hundred nonbreeding birds were at White Island 10 Jun 2004 (M. Barney *et al.*).

The presence of wintering birds obscures the precise start of migration inland, but its peak is typically the last 2 weeks of March and the first 2 weeks of April, slightly later than at the coast. From 1950–1960, it was irregular inland in spring and the maximum known count was 4 birds. It then became regular, and the subsequent in-crease is indicated by the peak spring counts of 130 in the Lakes Region 30 Mar 1970 (V.S. Wright *et al.*), 147 at Manchester 28 Mar 1979 (M.T. Martin), and 135 as far north as Berlin 9 May 2002 (R.A. Quinn). Latest inland spring migrants have usually passed through by the end of May, summering birds obscuring extreme transient dates.

Summer and breeding. While systematic yearly figures have not been kept, this species is thought to have nested at the Isles of Shoals every year since the early 1920s, the colony steadily increasing. Counts of nesting pairs at the Isles of Shoals in 1972 were 2200 on the ME islands and 55 on the New Hampshire islands; in 1977 there were 2136 in ME and 91 in New Hampshire; in 1980 there were 1941 in ME and 106 in New Hampshire; and in 1989 there were 2642 in ME and 221 in New Hampshire (Borrer and Holmes 1990). After 1989, the number of Great Black-backed Gull pairs nesting on all the Shoals islands fell to about 2400 pairs in both 1994 and 1995, the latter being the first years in which the number of Great Black-backed Gull pairs exceeded the number of Herring Gull pairs breeding there (Ellis and Good 2006). Raccoons introduced to Star Island by the winter of 2001–2002 reached Smuttynose and Appledore Islands, ME, by 2003 and eliminated the breeding gulls on those 3 islands (Ellis *et al.* 2007); breeding Great Black-backed Gulls have not returned to those islands as of 2009 though there is a robust colony on Duck Island, ME.

The first known inland summer record was 1 at Lake Winnisquam 18 Jul 1959 (T. Richards) closely followed by 1 at Littleton 2 Aug 1959 (R.J. Bradley). Nonbreeding birds have been found inland every summer since 1961,

chiefly in the Lakes Region, along the Merrimack River from Franklin south to Nashua, and in the Connecticut River near Littleton. The highest count of such inland birds is 100 at Berlin 15 Jul 2005 (R.A. Quinn, T. Richards). Postbreeding dispersal, particularly of juvenile birds, occurs in late July and in August; this probably accounts for the records of some first-year birds at inland localities that first appear at this time. An example is 12 at Berlin 15 Aug 1979 (M.T. Martin). The first inland confirmed breeding record and another probable breeding record were both at Manchester in 1983 (Foss 1994) but there have been no reports since. Even though BBS data do not include any breeding colonies, moderate annual population trend declines averaging just under 5% per year for both 1966–2009 and 1999–2009 (Appendix IV) have been reported.

Fall. Coastal numbers tend to build up in August, and peak migration period is from early September to mid-October. From early November until late December, flocks accumulate at favored coastal locations producing the largest concentrations at any season other than at breeding colonies in June. Examples are 860 at the coast 20 Nov 1972 (E.W. Phinney), 900 there 18 Dec 1971 (A.C. Borrer *et al.*), and 1000 at the Isles of Shoals 20 Dec 1969 (L.G. Phinney *et al.*). The species' increase and more recent decline is well illustrated by CBC totals at the coast: 28 on 28 Dec 1953, 1136 on 3 Jan 1981, a mean of 971 for the 1990s including 3038 on 17 Dec 1994, and a mean of 362 for the 2000s.

This gull was unknown inland in fall until 2 were found at Massabesic Lake, Manchester, 18 Nov 1953 (T. Richards). It has been recorded inland every fall since 1957, chiefly in the Merrimack River valley and the Lakes Region, being much less numerous in the Connecticut River valley. Peak migration period inland is about a week later than at the coast as in spring, but no large concentrations have been reported other than at the Rochester wastewater treatment plant since about 1995 where it is common to abundant most of the year. Otherwise, numbers occasionally accumulate in late November and December at Laconia, examples being 140 there 1 Jan 1972 (V.H. Hebert *et al.*) and 378 there 31 Dec 1972 (K.C. Elkins, W.S. Lord *et al.*). Unusual counts north of the White Mountains were 230 at Berlin 19 Nov 1996 (R.A. Quinn, T. Richards) and 700+ there 16 Dec 1999 (R.A. Quinn); latest known north country reports are 1 at Littleton 1 Dec 1963 (H.C. McDade) and 1 at Errol 20 Dec 1972 (R.W. Smart). The effect of the closing of the Concord landfill is illustrated as follows: a mean of 550 on the Concord CBCs for 1987 and 1988 but a mean of less than 1 (!) 2003–2009 (*fide* R.A. Quinn). Statewide CBC totals rose from 1700 in 1990, peaked at 4700 in 1994, only to fall to 1100 by 2009.

Winter. Both inland and at the coast, numbers tend to

decline slightly through January and February. The first reported successful inland wintering record is 2 at Laconia 7 Feb 1970 (W.S. Lord); 2 were at Woodsville 28 Feb 1977 (E.A. Emery). Peak inland winter count is 350 at Manchester 2 Jan 1999 (R.W. and M. Suomala) and 152 in Lisbon 27 Feb 1998 (R.J. Bradley). Single birds or small groups are irregularly reported along the Merrimack River at this season.

Sooty Tern *Onychoprion fuscatus*

Status. Visitor from the south, most records related to storms. One was collected at Newmarket 14 Sep 1878 by D. C. Wiggin, but apparently was not preserved (Deane 1878b, Allen 1903). Four were seen following a hurricane at Hinsdale on the Connecticut River 14 Aug 1955 (T. Richards; photo) and 1 was still there 17 Aug. One was found at Hancock, 30 miles northeast of Hinsdale, 15–16 Aug 1955 (C. Walcott), probably 1 of the birds found earlier at Hinsdale. Single birds were picked up dead 9 Sep 1979 at Hampton (D.B. Kirwan) and at Rye (A.C. Borrer *et al.*; MCZ #336797) shortly following Hurricane David. One seen at White and Seavey Islands 11 Aug 2000 (M. Charette, V. Saint-Amant, D.L. De Luca). One picked up dead near Rye Pond, Stoddard, 30 Aug 2011 (R. Sturgess *fide* E.A. Masterson) 2 days after Hurricane Irene; the full specimen could not be saved except for a spread wing (MCZ 388156) and a skeleton (MCZ FN 11-166). Six accepted records for VT (C.C. Rimmer pers. comm.), dozens of records for MA (Veit and Petersen 1993, BO database 2010), and over 10 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Remarks. Allen (1903) records that C. F. Goodhue wrote him “that through a *lapsus* on his part” a report of Black Tern was given as Sooty Tern by Dearborn (1898).

Least Tern *Sternula antillarum*

Status. Uncommon spring migrant and summer resident and early fall migrant in small numbers in the coastal region. At least 6 records for the Isles of Shoals. Unreported inland. Small numbers bred sporadically 1926–1959. Now considered an Endangered (extirpated) species in New Hampshire.

Early reports to 1950. The first known report for the state is that of Dearborn (1903) who called it “of rather irregular occurrence” and noted that S. A. Shaw “has one in his collection but reports it as uncommon at Hampton.” Goodhue (1922) called it an “uncommon transient visitor” thought not to nest at that time, and Forbush (1925) referred to it as a “rare migrant and summer visitant on [the] coast of New Hampshire...”

McGowan (1927) reported the first nesting in the state since the plume-hunting era at Seabrook 27 Jun 1926.

Shelley (1932f) had several records for the coastal region in the summer of 1932: 1 or more at Hampton Beach and Seabrook 3–4 Jul, 1 or more at Portsmouth 3 Jul, and on 18 Jul a Coast Guardsman told him that this species was breeding on a small island at the entrance to Portsmouth Harbor, but he did not go there to verify the report. From this it would seem likely that the species was a local breeder in small numbers on the mainland coast in 1926–1932 and possibly thereafter. Jackson (1947) reported the first known record for the Isles of Shoals: 1 seen off Square Rock 29 Jun 1935.

Least Tern was surely a regular transient and possibly a breeder, though probably only in small numbers, prior to the plume-hunting era in the 1880s. Palmer (1949) reports it regular in Casco Bay, ME, in about the 1870s, and Griscom and Snyder (1955) record that it was a “common summer resident” in MA until the 1880s. The latter authors also report that it became a common nesting species in northern Essex County, MA, for the first time since 1900 in the late 1940s, during which time its numbers present along the New Hampshire coast must have also increased.

1950 to present. From a high point in 1957–1958, numbers have declined again to very few; breeding ceased in 1959 and records became less than annual 2004–2009. Population trend listed as decreasing by Hunt (2012).

Spring. Earliest known arrival is 1 at Rye 7 May 1967 (R.W. Lawrence *et al.*), the next earliest record not being until 10 at Hampton 15 May 1960 (K.C. Elkins *et al.*). Mean arrival date is 21 May, and peak migration period is the last week of May and the first week of June. Peak count at any time is 40 at Hampton 2 May 1958 (T. Richards), but high spring counts have only been in the 1–6 range since 1990. Latest migrants are thought to have passed through by mid-June, latest known being 24 Jun 2000 at Seabrook (S.R. Mirick, J. Mathews).

Breeding and summer. The first certain breeding record in many years was verified at Hampton–Seabrook when 4 nests were found 31 May 1953 (D.W. Finch). Fifteen adults and 6 nests containing 13 eggs were found there 18–19 Jun 1953 (T. Richards), and 19 birds including 5 flying young were seen there 12 Jul 1953 (B. Baker *et al.*). In 1954, 2 nests, 5 eggs, and 16 adults were found there 9–17 Jun (N.L. Hatch, D.W. Finch). No nesting was recorded in 1955 but probably occurred, and 15–20 adults, several nests, and 6 young were observed there in Jun 1956 (T. Richards). At least 10 pairs were found 7 Jun 1957 (*fide* V.H. Hebert), and 9 nests were at Seabrook 5 Jun 1958 (N.L. Hatch). But only 2 nesting pairs were found on 4 Jun 1959, and no breeding has been confirmed in the state since (WAP 2005). After 1959, occasional birds thought not to be migrants or breeders have been present in early July: 2 at Seabrook 3 Jul 1969 (E.W. Phinney *et al.*), 2 there 10 Jul 1966 (L.G. and E.W. Phin-

ney), 1 on 13 Jul 1968 (H.C. Anderson), and 1 at Seabrook 11 Jul 2008 (S.R. Mirick). Single birds were at White and Seavey Islands 20 Jun and 2 Jul 1998 (J. Ellis, D. Hayward), 28 Jun 1999 (D. Hayward *et al.*), 27 Jun 2001 (D. Hayward), and 1–17 Jul 2005 (v.o.); 1 was at Star Island 1 Jun 2008 (E.A. Masterson *et al.*).

Southbound migration. Earliest suspected migrants since breeding ceased in 1959 were 4 adults at Seabrook 15 Jul 1996 (D.B. and T. Donsker), 1–5 at the coast 11–18 Jul 2004 (M.G. Harvey, J. Smith). Peak migration period is the first 2 weeks of August, and all birds are generally gone by the end of that month. The only known later records are 1 at the coast 9 Sep 1962 (ASNH field trip), 2 at Hampton Falls 9 Sep 1969 (R.W. Smart *et al.*), and 2 at Seabrook 10 Sep 1953 (V.H. Hebert).

Gull-billed Tern *Gelochelidon nilotica*

Status. Vagrant from the south. One at Rye 23 Jul 1998 (S.R. Mirick, D.J. Abbott) is considered hypothetical for lack of a third observer, a photograph, or specimen. Now annual in MA (Veit and Petersen 1993, BO database 2010), and at least 6 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Caspian Tern *Hydroprogne caspia*

Status. Occasional spring and regular fall transient along the coast on migration to and from breeding grounds farther north. Two early records, and 4 inland reports. An increase in reports since 2000.

Early reports to 1950. Dearborn (1903) notes it as “an irregular visitor. Mr. [S. A.] Shaw tells me he has observed it but twice at Hampton. Two, in immature plumage, were killed there in the fall of 1899. The skin of one of them is now in Mr. Shaw’s possession.” This specimen is now lost.

1950 to present. Rare in spring; at least twice in summer; uncommon but regular in fall; 3 inland records. See Mirick (2008) for discussion of the historical changes in breeding success in eastern Canada and VT and some comments on local records.

Spring. Uncommon. Fourteen reports from the mainland coast between the earliest date of 20 Apr 1980 (E.W. Phinney *et al.*) when 16 birds were found at Rye and the latest date of 21 Jun 2004 (S.R. Mirick) when 1 was at Rye; only the 1980 record exceeded 1–2 birds. Two records at the Isles of Shoals: 1 at White and Seavey Islands 11 May 2000 (M. Charette, D. Hayward) and 1 there 24 May 2007 (D. and M. Hayward).

Summer. One at Star Island 2 Jul 1988 (R. Forsman), 1 at White and Seavey Islands 16 Jul 2002 and possibly the same bird there 31 Jul 2002 (both D. Hayward *et al.*), 1 at Hampton 10 Jul 2009 (L. Tanino).

Fall. There are 41 reports involving nearly 250 individual birds between extreme dates from 1 at Seabrook 14 Aug 2004 (R.A. Woodward *et al.*) to 1 at Hampton 28 Oct 1995 (A. and B. Delorey). Most birds are transients migrating south and do not stop. Two records for August (3 birds), 21 for September (at least 88 birds), and 23 for October (at least 169 birds). As pointed out by Mirick (2008), fall records are heavily concentrated in the last week of September and the first week of October. One record for the Isles of Shoals: 2 at Star Island 27 Sep 1996 (R.W. Suomala). Counts are typically in the 1–6 range but peak counts have been 11 at Hampton 1 Oct 1961 (A.R. Keith, R.W. Smart), 14 at North Hampton 1 Oct 2006 (S.R. and J. Mirick), 30 passing Rye 4 Oct 1997 (S.R. Mirick, P. Lacourse *et al.*), and 48+ at the coast 1 Oct 2008 (S.R. and J. Mirick, T. Bronson). The number of records has been increasing: 6 from 1950–1979, 14 from 1980–1999, and 26 from 2000–2009, possibly due to an increased breeding population in the northeast as well as more intense observer coverage.

Inland. One at Squam Lake 1 Aug 1984 (H. Coolidge), 1 at Pittsburg on the unusual date of 10 Jun 2003 (E.B. Nielsen, S. Sweet), 1 at Exeter 13–14 Aug 2007 (I. Malo *et mult.*), and 1 at Charlestown 23 Jun 2010 (L. Tanino *et al.*).

Black Tern *Chlidonias niger*

Status. Regular spring and fall transient in small numbers, noted inland in spring more often than at the coast but more frequent in the coastal region in autumn.

Early reports to 1950. The first known state record is of 1 shot at Rye Beach 1 Sep 1868 and examined by W. Brewster but apparently not preserved. The next records are those of Brewster (1924) at Lake Umbagog: 4 young birds of the year found near the outlet of the lake 18 Aug 1874, of which 3 were collected (2 of these are MCZ #204255 and #204256) and 1 also near the outlet 8 Sep 1895. Brewster (1881) reported about 40 at Rye Beach 24 Aug 1880, of which 4 were collected by H. M. Spelman (1 is now MCZ #210214), this being the highest one-day count known for the state. The next day 2 more were collected (MCZ #210212 and BSNH #15742), and Brewster collected another there 20 Aug 1881 (BSNH #15741).

Allen (1903) had 3 additional inland records: 1 at Chocorua 30 Sep 1889 (*fide* F. Bolles), 1 at Lake Winnepesaukee 10 Jun 1878 (C.F. Goodhue), and an immature shot at Newfound Lake 9 Sep 1902 (H.T. Winchester). Wright (1911) considered it a “very rare migrant” in the Jefferson region, having but 1 record at Cherry Pond 12 Sep 1907. Goodhue (1922) repeated several of the above reports and added 1 at Webster Lake on an unspecified date “some years ago.” Forbush (1925) called it a “[r]are summer and uncommon fall migrant mainly

coastwise.” Van Dyke (1937) reported 1 at the outlet of Lake Umbagog 29–30 Jun 1936, 1 was at Holderness 2 Sep 1946 (J.B. May), 2 were at Cherry Pond 27 May 1949 (T. Richards), 2 were at Squam Lake 30 May 1949 (H. Coolidge), and 2 were at Concord 9 Jun 1949 (G.P. Baker).

1950 to present. An increase in records during this period, though regional and national data show significant declines.

Northbound migration. Earliest known arrival is 1 inland at Concord 1 May 1996 (R. Vernon, K.C. Elkins); and earliest known in the coastal region is 1 at White and Seavey Islands 2 May 2003 (J. Derrick, M. Barney). Mean spring arrival statewide is 16 May, and peak migration period is typically the last 2 weeks of May. In 1950–1980, there are records of at least 38 individual birds at inland localities compared to only 18 found in the coastal region including 2 at Jeffreys Ledge 3 Jun 1973 (L.G. Phinney *et al.*) and 7 there 17 May 1980 (E.W. Phinney). Occasional inland records since 1980, usually in late May. An unusual fallout of at least 12 birds occurred inland at 5 different localities 10–14 May 1996 (v.o.). Another weather-induced fallout of 21 birds inland 16–20 May 2007 (v.o.) included 9 at Littleton 17 May (R.J. Bradley). Another such fallout occurred in May 2011 with at least 10 birds seen (v.o.). Peak coastal spring count since 1950 is only 3 in a day. Migration is usually over by the first few days of June, and latest known spring records, other than the 1936 Lake Umbagog record, are stragglers inland at Pittsburg 24 Jun 1958 (F.T. Scott) and 1 at White and Seavey Islands 24 Jun 2005 (M. Barney *et al.*).

Southbound migration. Earliest known coastal arrival is 1 at White and Seavey Islands 4 Jul 2000 (M. Charette *et al.*) and earliest inland record is 2 at Cherry Ponds 6 Jul 1978 (T. Richards *et al.*). Peak migration period is the last 2 weeks of August both inland and at the coast. In 1950–1980, at least 34 individuals were recorded in coastal and offshore localities whereas only 10 were recorded inland. Twelve were at the coast 31 Aug 2005 (S.R. Mirick). All-time high count is a fallout of at least 328 birds, and probably more, at the coast 28 Aug 2011 during Hurricane Irene (S.R. and J. Mirick, L. Medlock, B. Griffith *et al.*). Latest known report from the coastal region is 2 at Seabrook 15 Sep 1968 (R.W. Smart, H.C. Anderson), and latest inland reports are 2 at Hanover 18 Sep 1961 (H. Weber) and 1 on 18 Sep 1991 at Pittsburg (S.B. and M. Turner).

Reports from the Isles of Shoals and adjacent areas include 1 at White and Seavey Islands 9 Jul 1998 (R.A. Quinn), 1 there 13 Jul 2003 (J. Derrick *et al.*), 1 at Jeffreys Ledge 9 Aug 2008 (S.R. and J. Mirick), 1 at White and Seavey Islands 16 Aug 2007 (D. and M. Hayward), 1 at Star Island 23 Jul 1955 (W. Taber), 1 there 26 Aug 1951 (W. Taber), 8 at Star Island 9 Sep 1967 (R.W. Smart *et*

al.), 1 there 12 Sep 1966 (R.W. Lawrence), and 3 at Jeffreys Ledge 13 Sep 1970 (R.W. Smart *et al.*). An unusual flock of 11 was seen flying south just east of the Isles of Shoals 6 Sep 1993 (S.R. Mirick, D.J. Abbott), illustrating that many birds pass southward offshore in fall.

Remarks. Allen (1903) points out that C. F. Goodhue's Jun 1878 record for this species was incorrectly reported as a Sooty Tern by Dearborn (1898) due to a "*lapsus*" on Goodhue's part. Despite Griscom's remark (1938), all of Brewster's records for Lake Umbagog appear to be for New Hampshire and none are for ME.

Roseate Tern *Sterna dougallii*

Status. Regular spring and early fall migrant in the coastal region and at the Isles of Shoals in small numbers in spring and slightly greater numbers in fall. Formerly a regular breeding species at the Isles of Shoals in the 1930s, but only thought to have bred on the mainland coast once since 1950. Breeding at the Isles of Shoals began again in 2001. Unknown inland. Now considered an Endangered species in New Hampshire.

Early reports to 1950. First reported for New Hampshire by Baird, Brewer, and Ridgway (1884, Vol. 2), who listed it as a summer resident at the Isles of Shoals. Neither Allen (1903) nor Dearborn (1903) had any specific records, but the latter felt it "undoubtedly" occurred along the coast. Goodhue (1922) did not list it either, and the species was possibly being overlooked, though it was probably not numerous during the plume-hunting era 1880s–1910s. Forbush (1925) called it a "rare summer visitant coastwise" in New Hampshire. White (1927, 1932b) reported 2–4 at Seabrook 27 Jun 1926, 2 there 5 Aug 1930, and 1 there 9 Jul 1931. Reports submitted to RNEB in 1936–1949 include 210 present at the Isles of Shoals in Jul 1940 (N.C. Nash, E. Mason), 20 at Seabrook 29 May 1947 (T. Richards), and 15 there 8 Jun 1948 (T. Richards).

At the Isles of Shoals, Jackson (1947) reported that about 10 pairs were found at Lunging Island in 1929 and that about 12 pairs were there in 1930. By 1935 the colony had increased greatly, and Wright (1937a) stated somewhat obscurely that in that year "the young of this species were apparently more abundant proportionately than were young Common Terns, although in 1936 nothing indicating this was seen." Jackson (1947) also stated it was "abundant" by 1935 but that by 1938 there were only "50 or 60 pair" mingling with the Common Terns.

1950 to present. A decline to low numbers and extirpation as a breeder probably by the 1950s (Smith 1979), but an increase beginning 2001. Population trend listed as stable by Hunt (2012).

Spring. Increasingly common with nesting at the Isles of Shoals. Earliest known arrivals are 4 at White and Seavey

Islands 7 May 2004 (M. Barney *et al.*) and 5 at Hampton 15 May 1960 (W. Taber *et al.*), peak migration period being the last week of May and the first week of June. Prior to the restoration of breeding at White and Seavey Islands in 2001, latest spring reports were 1 at White and Seavey Islands 7 Jun 1998 (J. Ellis, D. Hayward), 2 at Hampton harbor 18 Jun 1998 (S.R. Mirick), 2 at White and Seavey Islands 25 Jun 1997 (A. Cook, M. Schultze), and 10 there 30 Jun 2001 (D. Hayward *et al.*). Peak mainland coastal count before 2001 was 80 at Seabrook 18 May 1955 (G.P. Baker *et al.*), there having been no other counts in spring over 10.

Summer and breeding. An adult feeding a young bird at Seabrook 3 Aug 1963 (K.C. Elkins) was the only report of possible breeding since 1950. Single birds visited the Common Tern colony on White and Seavey Islands in late May 1999 and 4–5 were present there to 7 Jul (D. Hayward *et al.*) but there was no evidence of breeding. Three were at New Castle 19 May 2000 (A.C. Borrer *et al.*). Two to 7 were at White and Seavey Islands 12 May through 16 Aug 2000 except for 11 there on 4 Aug (D. Hayward *et al.*) but none bred. Once the ASNH tern colony protection project at White and Seavey Islands, which started in 1997, was firmly established, Roseate Terns began to appear and the first pair was found incubating 1 egg 5 Jul to 28 Jul 2001 and a fledgling was observed flying 23 Aug (D. Hayward, D.L. De Luca). As with Common Terns, numbers increased rapidly and then trended lower thereafter as shown in the following table (WAP 2005, NHFG data):

Year	#Nesting Pairs	Avg. Eggs/ Nest	Avg. Hatch/ Nest	Peak Seasonal Count
2001	1	1.00	1.00	83
2002	26	1.38	1.00	113
2003	65	1.34	1.06	135
2004	112	1.21	1.13	320
2005	67	1.23	0.82	180
2006	38	1.42	1.11	110
2007	57	1.56	1.37	190
2008	40	1.75	1.35	130
2009	40	1.75	1.10	120
2010	53	1.87	1.38	175

Southbound migration. Earliest known presumed migrants are 4 at Seabrook 6 Jul 1991 (S.R. Mirick) and 2 there 12 Jul 1970 (L.G. Phinney). Peak migration period is the last 3 weeks of August, and peak counts in this period are 125 at Seabrook 8 Aug 1965 (R.W. Smart) and 200 at the coast 31 Aug 1961 (R.W. Smart, V.H. Hebert). A late record for a large number is a flock of 450 terns at

Seabrook 6 Sep 1952 (H. Coolidge, T. Richards), a “very large proportion” (*i.e.* 200+) of which were thought to be this species. Latest known records are 1 at Seabrook 13 Sep 1960 (K.C. Elkins *et al.*) and 8 at the coast 1 Oct 1961 (R.W. Smart, V.H. Hebert *et al.*).

Comment. The tern restoration project on White and Seavey Islands was started by ASNH with numerous partners including NHFG. It was subsequently taken over by NHFG which continues to run it.

Common Tern *Sterna hirundo*

Status. Common and regular spring and fall migrant in the coastal region and at the Isles of Shoals, much more numerous in fall. Inland a casual spring transient, occasional southbound migrant, with 1 old breeding record. Declined markedly from 1929 as a breeding species until 1997 after which it greatly increased. Breeding population is considered as Threatened in New Hampshire and is listed as stable by Hunt (2009b).

Early reports to 1950. The first report for the state was that of Belknap (1792) who listed the “Tee-Arr or Fishing Gull, *Sterna minuta*,” his first English name being very suggestive of its voice. Later, Belknap (1812) listed the “Swallow-tail Gull or Meldrake, *Sterna hirundo*?” which was almost certainly this species as well. The next records are those of Brewster (1924) at Lake Umbagog who considered it an “[u]ncommon transient visitor in late summer and early autumn.” He reported a total of 19 individuals in New Hampshire “less than a mile from the outlet of the Lake” between extreme dates of 26 Aug 1898 and 22 Sep 1888 in 1873–1900. He collected an immature there 22 Sep 1888 and an adult female 11 Sep 1896. He had no spring records and found no evidence of breeding himself but had reports of what may have been this species “nesting on isolated rocks...near the head of Richardson Lake...” only about 10 miles outside the New Hampshire state line. Goodhue (1922) records that on 10 Jun 1878 he “found a pair nesting on a large bare rock in Lake Winnepesaukee” at a place called Forty Islands. Bolles (1893b) records 1 shot at Ossipee Lake 30 Aug 1890.

Dearborn (1903) states that it was “not likely to be seen [along the coast] in midsummer, as at that time they are confined to their nesting places, none of which are in this region;” it was then known to breed both to the north and the south of New Hampshire but only occurred there as a spring migrant and in fall especially “in August and early September.” Dearborn (1898) listed it for Belknap and Merrimack Counties on the authority of C. F. Goodhue without providing specific dates and (1905) listed it for Northfield without further comment. Allen (1903) called it a “spring and fall migrant, and formerly a summer resident on the coast,” thereby agreeing with Dearborn that the coastal breeding populations had been ex-

tirpated at that time.

White (1927) found a flourishing colony at Seabrook 30 Jun and 7 Jul 1926, and banded many young. The colony continued for at least 9 years. White (1929) noted 118 nests, 227 eggs, and 18 young 22 Jul 1929, but the nesting success of the colony that year was lost by high tides or a storm 8 Aug. White (1931b) reported 35–40 nests in Jun and Jul 1930, and about 1000 birds at Seabrook 5 Aug 1930. In 1931 at Seabrook, White (1932b) noted 66 nests, 139 eggs, and 34 young 8 Jul; 36 nests, 72 eggs, and 21 young 15 Jul; and 14 nests, 26 eggs, and 5 young 21 Jul. An unrecorded number appear to have nested in the Seabrook area almost yearly from then through the 1940s, though it is clear that the number of breeding pairs declined on balance during this period. At least 9 sets of eggs were collected at Seabrook Beach between 1933 and 1938 by J. S. Appleton and E. S. Coombs; they are now in the collection of the WFVZ (data courtesy of R.W. Suomala). A nest with 3 eggs was reported there 8 Jun 1948 (RNEB, T. Richards). At least 1 nest with eggs there as late as 1953 (WAP 2005).

At the Isles of Shoals, Thaxter (1870) reported that this species had formerly bred at Duck Island, ME, but apparently no longer did by 1870. The next report from there is that of Jackson and Allan (1931) who state that the species began nesting on Lunging Island in 1922 and continued to do so yearly until 1928 by which time the colony had built up to 1000 pairs. A new owner then took possession of Lunging Island in 1929 and threatened willful destruction of the entire colony, so an experiment in recolonization to Appledore Island, ME, was attempted as reported by Allan (1931) and by Jackson and Allan (1931). The recolonization effort failed, but the new owner was persuaded not to destroy the colony. Wright (1937a) reports that there were still about 750 pairs on Lunging Island in 1935 and 1936, and about 20 pairs attempted to nest unsuccessfully on Appledore in 1935 but did not try again in 1936. Jackson (1947) called this species second in abundance only to the Herring Gull at the Shoals and noted that throughout most of 1928–1938, 750–1000 pairs were still breeding at Lunging Island. Melzer (1935) reported that a bird banded at the Shoals 7 Jul 1928 at an unspecified island but probably Lunging, was recovered at Cabo Rojo, Puerto Rico, 7 Sep 1934. According to Nisbet (1973), the colony at Lunging Island persisted from 1938 at least until 1944, but the birds stopped breeding there sometime between 1944 and 1955 according to Taber (1955).

Inland at Squam Lake, 13 were found 8 Sep 1934 (T. Richards). Reports submitted to RNEB 1936–1949 included 4 inland records: 1 at Walpole and 7 at North Walpole 26 May 1940 (A.A. Green), 1 at Andover 30 Aug 1939 (K.C. Elkins), and 1 at Squam Lake 15 Sep 1948 (T. Richards). Also included were several records from the

coast: 840 at the Isles of Shoals in Jul 1940 (N.C. Nash, E. Mason); 280 at Seabrook 29 May 1947, 60 there 16 May 1948, 200 there 15 Sep 1949 (all T. Richards); and 1 at Hampton on the very late date of 23–25 Nov 1937 (G. Walcott).

In summary, the pre-1900 breeding population appears to have been extirpated by 1870 and certainly by 1900, probably due to the plume trade. From 1922 until the 1930s the breeding population grew and reached its pre-1950 highest numbers, both on the mainland and at the Isles of Shoals. From the 1930s until the late 1940s its numbers appear to have steadily declined.

1950 to present. Though original numbers were not large, a general but gradual decline on the order of 50% occurred until restoration efforts began in 1997; those efforts were spectacularly successful.

Spring. Earliest known coastal arrivals are 9 at White and Seavey Islands 30 Apr 2001 (D. Hayward, A. LeFrancois) and 2 at Durham 2 May 2000 (S.R. Mirick). Mean arrival date is 9 May, and peak coastal migration period is typically the last 2 weeks of May and the first 2 weeks of June. Prior to the establishment of a breeding colony on White and Seavey Islands in 1997, peak coastal spring count was about 100 at Seabrook 21 May 1960 (R.R. Rathbone), and there were few known counts over 50. By 2001, counts in the 400–600 range were present at White and Seavey Islands by mid-May (D. Hayward, A. LeFrancois), and 3000 were there by 12 May 2004 (M. Barney *et al.*). Latest coastal transients are thought to have passed through by the end of the second week of June.

Inland, there are 11 spring records before 2011: 4 at Chesterfield 26 Apr 1965 and 1 still there the next day (T. Richards *et al.*), 1 at Chesterfield 8 May 1961 (T. Richards), 1 at Spofford Lake, Chesterfield, 9 May 1960 (T. Richards), 1 at Littleton 4 Jun 1967 (R.J. Bradley), 2 at Squam Lake 22 Jun 1967 (A. Lincoln), 1 at Hopkinton 26 May 1970 (H.W. Parker), 14 at Alexandria 17 May 1978 (V.H. Hebert *et al.*), 1 at Littleton 9 Jun 1980 (R.J. Bradley), 2 at Enfield 11 May 1996 (T. Butler), 1 at Lyman 13 May 1996 and 24 May 2000 (S.B. and M. Turner *et al.*), 1 at Concord 18 May 2007 (E.A. Masterson *et al.*), 1 at Hinsdale 20 May 2007 (E.A. Masterson), 2 at Hinsdale 28 May 2009 (E.A. Masterson), and 1 far north at Lake Umbagog 2 Jun 1991 (S.B. and M. Turner). In 2011 there were at least 8 inland records through 18 May including 1 at Errol 7 May 2011 (R.A. Quinn, E.A. Masterson *et al.*).

Summer and breeding. No breeding was recorded at the Isles of Shoals 1950–1996. Since 1950 this species has been recorded breeding at Portsmouth/New Castle, in the Great Bay estuary, and in the Hampton–Seabrook marshes.

In the Great Bay estuary, a “small colony” was noted at Little Bay in 1958 (T. Richards), and birds were later

found nesting on 5 small islands where numbers peaked about 1970 at about 40–50 pairs. Four to 6 pairs were nesting in Newington in 1986 (Foss 1994), and about 20 pairs persisted on the small islands from 1989 to 2004 (WAP 2005).

At Portsmouth/New Castle a colony averaging 15–20 pairs was first noted in the late 1950s but it dwindled to about 6 pairs in 1966, only 1 known pair in 1971, but then recovered to about 16 pairs in 1979 and produced 32 young in 1980. Thirty to 35 pairs nested in New Castle in 1986 (Foss 1994), but the colony dwindled through the 1980s and early 1990s due to predation and disturbance and was abandoned in 1998 after the White and Seavey Islands colony was established (WAP 2005).

A few pairs nested in the Hampton–Seabrook marshes 1950–1972, though no more than 4 pairs in any 1 year, and nesting has not always been successful. About 20 pairs nested in the Hampton marshes in 1986 (Foss 1994). About 100 nests in 1990 produced few fledglings but 35–40 fledglings were produced in 1993. However, nesting has continued to the present though fewer than 25 pairs remained in that area as of 2004 (WAP 2005).

Two at Star Island 25 Jun 1989 (T.H. Arter, L. Harper) may not have been breeding. Seventy-five in Seabrook Harbor 27 Jul 1996 (A. and B. Delorey) and 100 in the Hampton marshes 12 Jun 1998 (S.R. Mirick, D.L. De Luca) suggest birds could have been breeding locally.

Six pairs recolonized White and Seavey Islands for the first time in about 50 years in 1997 after a restoration program was begun; bird decoys and tape recordings of a tern colony were used to attract the birds. A non-lethal program of systematically excluding gulls (see De Luca 1997) has been followed since with the following breeding results provided by NHFG:

Year	#Nesting Pairs	Avg. Eggs/ Nest	Avg. Hatch/ Nest	Peak Seasonal Count
1997	6	-	-	12
1998	45	-	2.02	120
1999	141	2.84	2.48	525
2000	446	2.60	2.33	1600
2001	809	2.44	2.18	2500
2002	1687	2.52	2.09	5500
2003	2414	1.96	1.61	8000
2004	2582	1.84	1.67	7500
2005	2480	1.93	1.14	7500
2006	2464	2.17	1.48	10,000
2007	2539	2.19	2.02	7700
2008	2227	2.29	1.95	7200
2009	2377	2.45	2.00	7400
2010	2615	2.62	2.26	9600

Inland, there are 6 summer records: 1 at Littleton 28 Jun 1964 (J.C. McIlwaine), 2 at Lake Winnepesaukee 4 Jul 1969 (E. Densmore), 2 at Littleton 2 Jul 1970 (R.J. Bradley), 1 at Hopkinton 16 Jul 1976 (H.W. Parker *et al.*), and singles at Lake Umbagog 10 Jul 1980 (H.M. Martin) and 17 Jul 1993 (C.J. Martin, G. Springs).

Southbound migration. An early migrant, the first birds may appear in the third week of July but cannot be distinguished from summering birds. Peak coastal migration period is the last week of July through the first week of September. Peak counts in this period at Seabrook are 200 on 28 Jul 1952 (H. Coolidge), 300+ on 30 Aug 1954 (T. Richards), and 400 and 1000 on 13 and 27 Aug 1961 respectively (R.W. Smart, V.H. Hebert *et al.*). Presumed postbreeding flocks are also occasionally found offshore at Jeffreys Ledge: 1500 there 15 Aug 2009 (B. Griffith, L. Kras). No counts over 100 at this season were recorded 1966 to 1995. However, since the establishment of the breeding colony on White and Seavey Islands, numbers recorded at the Isles of Shoals and the adjacent coast have risen dramatically: 500 at Seavey Island 10 Aug 1999 (D. Hayward, D. Trested) and 2000 on both 1 Aug and 15 Aug 2001 (D. Hayward *et al.*). Coastal numbers usually drop sharply by late September but flocks occasionally occur later in mild seasons, as 75 at the coast 10 Oct 1964 and 100 there 18 Oct 1964 (both *fide* V.H. Hebert). Prior to 1966, occasional birds were known to linger irregularly to the last week of October, but there has been only a handful of reports after 15 October since that year. Latest known fall reports are 5 at the coast 1–7 Nov 2005 (v.o.) after Hurricane Wilma in late Oct, 1 at the coast 17 Nov 1962 (K.C. Elkins *et al.*), and 1 at Rye 22 Nov 1970 (L.G. Phinney). The only record in early winter is 1 at Seabrook 19 Dec 1981 (*fide* C.A. Federer).

Inland, there are 10 fall reports: 1 at Harrisville 26 Jul 1959 (T. Richards); 2 at Manchester 3 Aug 1999 (R. Andrews); 2 adults at Laconia 12 Aug 1969 (H.C. Anderson); 4 at Lake Winnepesaukee 14 Aug 1967 (E. Densmore); 1 there 22 Aug 1956 (R.W. Smart); 1 at Lake Winnepesaukee 30 Aug 1974 (A.C. Borrer *et al.*); 1 at Dummer 5 Sep 1975 (F. Yates *et al.*); 8 at Enfield 17 Sep 1999 (P.D. Hunt); 1 at Jefferson 19 Sep 1965 (T. Richards, A.C. Borrer *et al.*); and the latest at Newfound Lake, Bridgewater, 22 Oct 1975 (S.A. Fogleman).

Arctic Tern *Sterna paradisaea*

Status. Probably a regular spring and fall transient in the coastal region and at the Isles of Shoals in small numbers, but reported irregularly since 1950 and probably overlooked among the greater numbers of similar species. Formerly bred regularly at the Isles of Shoals in the 1930s but only bred sporadically on the mainland coast since 1950 and since 2002 on White and Seavey Islands. Now a few pairs nesting in the Isles of Shoals since 2002. Ca-

sual inland in spring. A species of Special Concern in New Hampshire.

Early reports to 1950. The first records for the state are those of Brewster (1924) at Lake Umbagog where he considered it an “[u]ncommon transient visitor in spring” on the basis of 9 birds recorded on 3 occasions. One was seen just over the border in ME 17 Jun 1879, but it was presumed to be the same adult male collected in New Hampshire the next day (BSNH #15745). A total of 5 were present near the outlet of the lake 18–23 May 1881; 1 was collected 20 May and 2 more 23 May 1881, 1 of the latter being MCZ #205408. Three were seen virtually on the state line 15 Jun 1903, and can probably be considered New Hampshire records also.

Dearborn (1903) had no records for the coastal region but stated that this was “surely due to a lack of proper scrutiny on the part of the observers as [it] must be found along the coast.” White (1926) recorded 3 collected at Hampton Sep 1903, by E. Nudd and deposited in the Goodhue collection. White (1927) also recorded the first breeding record for the state at Seabrook, a nest found 30 Jun 1926 and observed again the following 9 Jul when he collected 1 of the adults (MCZ #291821). Goodhue (1922) called it an “uncommon transient” in spring and fall at the coast. L. R. Nelson found 1 dead at Wilson Pond, Keene, 28 May 1940 which was mounted and was in the NHFG headquarters in Concord until that building burned down 21 Apr 1985 (Swanson 1985). One was seen at Seabrook 8 Jun 1948 (T. Richards).

At the Isles of Shoals, Wright (1937a) reported 2 immatures collected off Square Rock 29 Jun 1935 by C. F. Jackson (1 is MCZ #275730) but noted that they “were considerably older than any other young birds seen at the islands, and it is doubtful if they were raised there.” Adults were found on Lunging Island 2 Jul 1935 and 2 of them were collected by C. F. Jackson. One was also collected there by P. L. Wright 15 Jul 1936 (MCZ #275729). Wright (1937a) continues: “It is difficult to say how many of these birds nested on [Lunging] Island. There were perhaps twenty-five pairs nesting in 1935 and there may have been a few more breeding in 1936. None of the young were observed at the island, although adults were seen frequently bringing in fish. A young bird apparently raised on the island was taken off Square Rock on July 23, 1935 [MCZ #275730]. In the last few days in July 1936 this species seemed to be more abundant than it had been during the summer. A flock of about twenty-five were seen feeding off Square Rock on July 19, 1936. Some of these birds may have been migrating from another breeding place, but I have no proof.” There is only 1 other specific observation of Arctic Terns at this colony, an estimated 350 at the Shoals in Jul 1940 (N.C. Nash, E. Mason). A few may have nested undetected each year from 1922 at least until 1944 among the much larger numbers of Common Terns.

1950 to present. Now reduced to very small numbers. Population trend is listed as stable by Hunt (2012).

Spring. Earliest known coastal arrivals are 2 at Portsmouth 8 May 1980 (E.W. Phinney), 1 at White and Seavey Islands 9 May 2001 (D. Hayward, A. LeFrancois), and 800 at Jeffreys Ledge 17 May 1980 (E.W. Phinney); more usual arrival is the first week of June: 2 visited the Common Tern colony at White and Seavey Islands 5 Jun 1997 (M. Schultze, A. Cook) and 2 were at Hampton 12 Jun 1996 (D. Strong *et al.*). One to 2 visited the Common Tern colony on White and Seavey Islands sporadically 6 Jun to 14 Jul 1998 (J. Ellis, D. Hayward), 2 were there 9 May 1999 (D. Hayward, M. Tarr), and 1–6 were there between 12 May and 4 Aug 2000 (D. Hayward *et al.*).

Summer and breeding. Prior to the onset of breeding at White and Seavey Islands as part of the tern restoration project in 2002, a few were occasionally seen from late June until late July, as 3 at Seabrook 27 Jul 1952 (T. Richards *et al.*). Two adults were seen feeding 2 young at Hampton 27 Jul 1957 (K.C. Elkins). A pair nested at Portsmouth in the Common Tern colony in Jul 1965 (K.C. Elkins *et al.*), a nest with 2 eggs was found there 4 Jul 1966 (H.C. Anderson), and 2 nests were found there in Jul 1967 (L.G. Phinney *et al.*). A pair was found defending a territory in the Common Tern colony at Hampton 14 Jun to 3 Jul 1995 (D.L. De Luca, S.R. Mirick *et al.*) and again 21–22 Jun 1997 (D.B. Donsker *et al.*) but no breeding was documented. Two were present at White and Seavey Islands 2–7 Aug 2001 (A. LeFrancois *et al.*).

Once the Common Tern colony on White and Seavey Islands was firmly established, a few Arctic Terns began to appear and the first active nest in 35 years was found in 2002. The following table summarizes the results of breeding at White and Seavey Islands through 2010 (WAP 2005 and NHFG data):

Year	#Nesting Pairs	Avg. Eggs/ Nest	Avg. Hatch/ Nest	Peak Seasonal Count
2002	1	2.00	2.00	-
2003	6	1.50	1.50	18
2004	7	1.29	0.43	15
2005	9	1.83	1.67	20
2006	8	1.75	1.00	16
2007	6	2.00	1.17	15
2008	8	1.88	1.25	21
2009	7	2.00	0.71	16
2010	6	2.00	1.83	21

Fall. In the coastal region, a few rarely linger into early fall as suggested by 2 at Rye 3 Sep 1979 (D.J. Abbott *et al.*) and 1 at Seabrook 4 Sep 1999 (A. and B. Delorey). Off-

shore, latest known fall records are 2 at Jeffreys Ledge 7 Sep 1994 (P.D. Hunt), 2 there 11 Sep 1980, and 19 there 21 Sep 1980 (both E.W. Phinney). Latest known coastal report in fall is 1 at Seabrook 30 Sep 2008 (S.R. and J. Mirick).

Inland. Seven reports in spring, all in May; once in fall. A flock of 30 at Spofford Lake, Chesterfield, 9 May 1960 (T. Richards) after a strong easterly storm. Three at Franconia 10 May 1996 (J.C. McIlwaine) and 1 still there 12 May 1996 (R. and C. Hogan); 1 at Jefferson 14–17 May 2006 (D. Govatski *et al.*); 1 at Whitefield 16 May 2006 (D. Govatski, B. Crowley); and 1 at Hinsdale 29 May 2009 and 1 at Charlestown 19 May 2010 (both E.A. Master-son). The only known inland fall report is 1 at Squam Lake 8 Oct 2006 (R.S. Ridgely, A.J. Vazzano; photo), exceptionally late for anywhere in North America and the latest known for the state.

Forster's Tern *Sterna forsteri*

Status. Irregular late summer and early fall visitor in the coastal region, occasionally lingering into late fall. Three spring records from the coastal region and 3 accepted inland reports.

Early reports to 1950. The first record for the state is an immature male collected by W. Brewster at Seabrook 24 Sep 1872 (MCZ #330428) as reported to Forbush (1925). Surprisingly, this record was unknown to Dearborn (1903), Allen (1903), or Goodhue (1922). It seems likely that the number occurring in New England declined during the plume-hunting era, and Griscom and Snyder (1955) report that it was unrecorded in MA from 1888 to 1924 but had since become regular there. While probably never as numerous as in MA, the same pattern was probably reflected in New Hampshire.

1950 to present. An increase in reports during this period, probably due both to intensified field work and some increase in the number of birds present.

Spring. One in first summer plumage at Seabrook 8 Jun 1965 (T. Richards); 1 at Hampton 27 Jun 1982 (E.W. Phinney); 1 at Rye 2 Jun 1999 (B. Bruni, A.J. Vazzano). One exceptional record of 1 inland at Horseshoe Pond, Concord, 26 Apr 2011 (L. Hansche, D. LaValey; photos).

Summer and fall. Earliest known arrival is 1 at Seabrook 9 Jul 1996 (G. Mitchell), next being a juvenile picked up exhausted at Hampton 20 Jul 1968 (R.W. Smart, H.C. Anderson); it carried USFWS band #963-2765 and had been banded as a nestling at Robbins Marsh Island in Chincoteague Bay, Maryland, 30 May 1968 (specimen #4165-A at UNH). Next earliest records are 1 at White and Seavey Islands 22 Jul 2001 (D. Hayward) and 1 at Seabrook 24 Jul 2003 (M.G. Harvey *et al.*). Several other reports from then through the end of July. In 1950–1980, numbers of individuals recorded were 1 in July, 5 in Au-

gust, 7 in September, 6 in October, 2 in November, and 2 in December. Since 1980, it has appeared nearly every year from July to October; an unusual 12 birds were found in fall of 1993, 9 in 1999, and 10 in 2001 including 7 at Hampton Harbor 14 Sep (S.R. Mirick). One was at Hampton 18 Sep 2004 (S.R. Mirick *et al.*), 11 there 28 Sep 2004 (J.P. Smith), and 3 there 23 Oct 2005 (S.R. and J. Mirick). The latest records are 1 at Seabrook 23 Nov 1958 (ASNH field trip), 1 there 10 Dec 1972 (C.A. Federer), 1 at Hampton 11 Dec 2005 (S.R. and J. Mirick *et al.*; photo), and 1 there 28 Dec 1957 (*fide* A.C. Borrer). An unprecedented influx occurred 1 Aug to 29 Oct 2008 (v.o.) when 117 birds were reported along the coast, peak count being 37 at Seabrook 19 Sep 2008 (S.R. and J. Mirick). Additionally, in a photo by S. R. Mirick on file at ASNH 31 birds are shown at Seabrook 19 Sep 2008.

Inland. Five accepted records: an adult at Turkey Pond, Concord, 22 May 1972 (T. Richards, K.C. Elkins, R.W. Smart) associating part of the time with an exceptional flock of 16 Black-legged Kittiwakes; 1 at Concord 2 Sep 1974 (T. Richards); 1 at Dunbarton 5 Jun 1983 (A.E. Lajoie, H.B. Miller, J.B. Grant); and 1 at Hancock 2 Oct 2007 (D. and L. Stokes); 1 at Lake Massabesic, Auburn 24–25 Aug 2010 (E.A. Masterson). Two other records referable to this species though not certainly identified and possibly relating to the same individual are an adult tern with very pale primaries at Hinsdale 1 May 1962 (T. Richards) and 1 at least 120 miles farther north at Littleton 2 May 1962 (R.J. Bradley), both observed to have an orange base to the bill and orange legs.

Royal Tern *Thalasseus maximus*

Status. Rare visitor from the south; since 1954 seen 5 times in April–June, otherwise thought to be nonbreeding or postbreeding dispersal birds mid-July to 21 August. Kras and Griffith (2010) illustrate a major increase in records since 2004.

Spring. One was at Rye 18 May 1975 (E.W. Phinney, S.A. Fogleman), 1 at Rye 7 Jun 1992 (W.G. Ellison), 1 at Rye 10 Jun 2009 (E.A. Masterson), 1 at Seabrook 26 Jun 2009 (M.G. Harvey), and 1 remarkably early at the coast 10 Apr 2010 (B. Griffith, L. Kras; photo).

Summer and fall. One was seen alive at Hampton–Seabrook Harbor 4 Sep 1954 (B.D. and T. Richards) shortly after Hurricane Carol. Either this same bird or a second was picked up dead later the same day (D. Dupee, R. Mason), now #433 in the UNH mounted collection. One at Rye 20 Aug 1991 (R.A. Quinn), 1 at Hampton 20–21 Aug 1991 (D.J. Abbott, S.R. Mirick *et al.*; photo) after Hurricane Bob; 1 at Seabrook 10 Jul 1996 (R.A. Quinn; photo) and possibly the same bird there 17 Jul 1996 (G. Mitchell). Two were at Rye 15–16 Aug 2004 (S.R. Mirick, D.J. Abbott *et mult.*); 1 at White and Seavey Islands 16

Aug 2006 (D. and M. Hayward); 1 at Rye 2 Aug 2008 (L. Medlock *et al.*); 2 on 9 Aug 2008, 1 at Jeffreys Ledge (D.B. Donsker *et al.*) and 1 at Rye (R. Frechette *et al.*); 1 at Hampton 9 Aug 2009 (B. Griffith, L. Kras); and 1 at Hampton harbor 12 Sep 2010 (S.R. Mirick *et al.*).

Sandwich Tern *Thalasseus sandvicensis*

Status. Vagrant from the south. One record considered hypothetical for lack of a third observer seen inland at Conway Lake, Carroll County, 6 Oct 1954 (N.L. and M. Hatch), about 6 weeks after Hurricane Carol. One at Seabrook 20 Aug 1991 after Hurricane Bob (S.R. Mirick; photo). Rare but nearly annual in MA (Veit and Petersen 1993, BO database 2010), and over 10 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Black Skimmer *Rynchops niger*

Status. Rare visitor from the south. At least 10 records. Reports cluster from mid-August to early September; twice in spring, twice in November. The first state records were 1 and 3 respectively on 1 and 2 Sep 1954 (P.E. Keenan) shortly after Hurricane Carol. One at Seabrook 12 Aug 1961 (K.C. Elkins); and 3 at New Castle 8 Nov 1968 (C. and E. Norris), 1 of these almost surely being 1 seen at Hampton Falls 9 Nov 1968 (C. Casas). One adult was at Seabrook 7 Jul 1973 (W.C. Ingham). One was at Seabrook 24 Aug 1983 (E.W. Phinney). The high count for the state is 33 at Rye 6 Sep 1979 (E.W. Phinney) after a southerly storm. Two at Seabrook 21–22 Aug 1991 after Hurricane Bob (S.A. Fogleman, D.J. Abbott *et al.*). One near Durham in Great Bay estuary 19 May 1995 (J. and D. Chorlian), surprisingly far from the ocean. One at White and Seavey Islands 6 Jun 1999 (D. Hayward, D. Trested), the first known record for the Isles of Shoals. An estimated 8–12 birds were at the coast 10–26 Sep 2010 (v.o.) following the passage of Hurricane Earl offshore on 4 Sep; 1 late at Hampton 30 Oct 2010 (J. Lambert *et al.*).

FAMILY STERCORARIIDAE

Pomarine Jaeger *Stercorarius pomarinus*

Status. Presumed to be a fairly common spring and fall transient over the ocean just east of the mainland at Jeffreys and Cashes Ledges. Rarely seen from the mainland shore. Four inland records.

1950 to present. Remarkably, there appear to be no acceptable reports for the state prior to 1965.

Northbound migration. Only 3 known coastal records in May and June and 2 inland. The earliest known are 1 at

Rye 10 May 1965 (L.G. and E.W. Phinney) and 1 there 17 May 1980 (E.W. Phinney); 1 at the entrance to the Hampton River 13 Jun 1971 (A.C. Borrer). The first documented inland state record is of 1 at Lake Winnepesaukee 12 Jun 1974 (R.S. Ridgely, J.H.V. Fisher; photo). The second inland report was also photographed at Squam Lake 24–27 Jun 1976 (S. Sutcliffe, B.S. Ridgely, S.A. Fogleman, G. LeBaron).

Southbound migration. The situation is confused because of the possibility of summering birds offshore which may account for reports in July and August: 1 near Jeffreys Ledge 4 Jul 2009 (B. Griffith, L. Kras), 1 near Jeffreys Ledge 15 Aug 2009 (L. Kras *et al.*), and single birds in the Jeffreys/Cashes Ledge area 16 and 19 Aug (E.A. Masterson *et al.*). The earliest nearshore report is 1 on 30 Aug 1979 off New Castle (E.W. Phinney, D. Holmes), and the earliest likely migrant may have been 1 at Jeffreys Ledge 8 Sep 2009 (E.A. Masterson *et al.*). There are at least 10 coastal records for September 1980 to date. Four seen off Rye 17 Sep 2006 (S.R. and J. Mirick). On 8 Oct 1978 at least 5 were found at Jeffreys Ledge including first- and second-year birds (D.W. Finch, D.J. Abbott, E.W. Phinney, P.D. Vickery *et al.*). Latest known are 1 offshore 31 Oct 1987 (S.A. Fogleman), 1 seen off Little Boar's Head 2 Nov 1982 (S.A. and W.W. Fogleman), 1 there 17 Nov 2010 (S.R. Mirick). The only known fall inland records are 1 at Bristol 6 Sep 1993 (J. Westfall, S.A. Fogleman) and 1 at Powwow River, Kingston, 26–27 Oct 1969 (E.W. Phinney). A total of 5 unidentified jaegers seen off North Hampton 25 and 28 Nov 2004 (S.R. Mirick *et al.*) very possibly pertain to this species.

Masterson (2002c) reports 17 records 1969–2002 between 2 in May and 1 in November with a peak of 6 in September, all of which are included above. Eight accepted inland records for VT in Lake Champlain (C.C. Rimmer pers. comm.).

Parasitic Jaeger *Stercorarius parasiticus*

Status. Irregular to regular fall migrant, principally offshore.

Early reports to 1950. The first published record for the state is that of Dearborn (1903) who mentions 1 collected by S. A. Shaw at Hampton, the specimen now lost. Almost certainly the same individual bird is mentioned by Goodhue (1922): “Mr. S. Albert Shaw...tells me that he has only known of one specimen in thirty years gunning off Boar's Head.” Allen (1903) called it “A visitant of the coast in [spring], late summer and fall” and gave the first specific date, a bird taken at Seabrook 2 Sep 1897 then in the possession of Mr. A. A. Eaton but now lost. Eaton also wrote to Allen that the species was then “quite common during September,” a remark that contrasts with that of Shaw's cited above.

At the Isles of Shoals, Wright (1937) and Jackson (1947) report 3 records 1928–1938: 1 on 10 Jul 1933 and 1 on 8 Aug 1938, both in unspecified states; and 1 on 15 Aug 1935 “about a mile east of Anderson's Ledge.”

1950 to present. Rare in spring; regular in fall and 1 likely inland fall report.

Northbound migration. Earliest known is 1 at Star Island, Rye, 22 May 2011 (J. Lambert) though birds could be offshore at least a week earlier than this based on data from MA (Veit and Petersen 1993). Three birds at Rye both 13 and 14 Jun 1998 (S.R. Mirick), 2 at Seal Rocks 10 Jun 2006 (S.R. and J. Mirick), and 1 seen from shore at Rye 24 Jun 2009 (S.R. Mirick). An unidentified jaeger seen off Ragged Neck 24 May 2003 (M.G. Harvey) may belong here.

Southbound migration. As for the previous species, possibly summering birds in July and August obscure the onset of fall migration: 1 at Jeffreys Ledge 4 Jul 2009 (L. Medlock, J. Lambert *et al.*), 2 seen from shore 6 Jul 2009 (E.A. Masterson), 1 near Jeffreys Ledge 14 Jul 2009 (A.J. Vazzano, R.S. Ridgely *et al.*), and 1 off Rye 29 Jul 1978 (E.W. Phinney, S.A. Fogleman). The presence of unusual amounts of bait fish attracted unusual numbers of pelagic birds and whales in 2009: 18 birds seen on 3 separate trips to Jeffreys Ledge 1 through 16 Aug 2009 (S.R. Mirick, L. Kras *et al.*), including some listed above, with a peak count of 9 on 15 Aug. The majority of reports are in the last week of August through the first 3 weeks of September; 5 at Jeffrey's Ledge 8 Sep 2009 (S.R. Mirick *et al.*). Seven October reports of 11 individual birds, the latest being 1 seen off Rye 28 Oct 2006 (S.R. and J. Mirick), and the latest known is 1 at Rye 1 Nov 1999 (R.A. Quinn *et al.*). The only known possible inland record is of 2 seen passing Little Round Top, Bristol, 2 Oct 1977 (V.S. Wright *et al.*) which were certainly jaegers and may have been Parasitics, but the possibility of immature Long-tailed Jaeger could not be ruled out. Unidentified jaegers seen near Jeffreys Ledge 3 Dec 2001 (J.W. Berry, D. Green), 1 seen at the coast 15 Jul 2004 (M.G. Harvey), and 5 seen 20–31 Aug 2005 (S.R. Mirick *et al.*) possibly pertain to this species.

Long-tailed Jaeger *Stercorarius longicaudus*

Status. Very rare late spring transient, 4 of the 5 known spring records from inland localities. Rare fall migrant, primarily offshore at Jeffreys Ledge.

Spring. The first state record was a breeding-plumaged bird found in a weakened condition in a field in Lancaster in the Connecticut River valley 12 Jun 1965 (G. Waterhouse) and now in the UNH mounted collection (#641). The second record was a subadult found at Squam Lake 18–19 Jun 1968 (T. Richards *et al.*; photos in NHAQ 21 [4]: 118 and 137 and 26 [1]: 11). One pho-

tographed at Surry 14 Jun 1974 (D.W. Crumb) remained for nearly 3 weeks. An adult with full tail was seen at Quincy Bog, Rumney, 24 May 1975 (H.M. van Deusen, G. Kent, J. Quinn *et al.*). A probable summering bird was offshore 4 Jul 2009 (L. Medlock, B. Griffith *et al.*; photo).

Southbound migration. In 2009 there was an unusual amount of bait fish offshore which also attracted unusual numbers of pelagic birds and many whales to the Jeffreys Ledge area: 2 summering juvenile birds near Old Scantum 15 Aug (B. Griffith, L. Kras), 1 there 16 Aug (S.R. and J. Mirick *et al.*), and 1 at Jeffreys Ledge 18 Aug (C. Sheridan). One there 8 Sep (S.R. Mirick *et al.*) could have been a fall migrant. All the 2009 birds were satisfactorily photographed. Also see Mirick (2009a). Six accepted inland records for VT, mostly at Lake Champlain (C.C. Rimmer pers. comm.).

FAMILY ALCIDAE

Dovekie *Alle alle*

Status. Irregular, variably rare to uncommon fall transient, winter resident, and spring transient in the coastal region, at the Isles of Shoals, and likely more common in adjacent offshore waters. Casual inland in highly variable numbers after strong easterly storms, especially in November. Sharp reduction in reports since 1980–1990.

Early reports to 1950. The first report that probably applies to New Hampshire as well as ME is that of Thaxter (1870) who noted “little auks” at the Shoals in winter. Ormsbee (1894) mentions “large numbers” inland in New Hampshire in the fall of 1874 after a severe northeast storm. Dearborn (1898) records 1 killed at Warren at a date then lost and 1 in Merrimack County (*fide* C.F. Goodhue). The latter is presumably the 1 “picked up about Concord” by A. H. Crosby after a severe storm prior to 1877 and very possibly in 1874 as recorded by White (1924b, 1937).

In the coastal region, Dearborn (1903) considered it “by no means rare” in winter along the coast, and Allen (1903) called it a “not uncommon visitor off the coast” and casual inland, having a record for 5–6 “blown inland” to Milford about 1883 (*fide* J.P. Melzer). Goodhue (1922) reported that 10 Jan 1905 “one flew against a window at Grafton.” Allan (1931) reports 1 in an unspecified state at the Isles of Shoals 29 Dec 1929.

There was a great flight along the coast and 2 inland reports after the great storm of 7–10 Nov 1932. “Hundreds” were seen at Rye Beach 9 Nov 1932 (L.R. Nelson), of which 8 were collected, and 1 was found at Nashua about the same time (*fide* L.O. Shelley). Two were found dead on the road near Portsmouth 14 Nov 1932 (J.D. Smith),

and 1 was found at Wolfeboro 10 Nov 1932 (*fide* J.B. May). A bird found dead in Brookline 16 Nov 1937 (G. Proctor) was mounted and on display in the NHFG headquarters in Concord until the building burned down 21 Apr 1984 (Swanson 1984). One was found at Hanover 20 Nov 1948 (*fide* L. Forsyth).

The huge flight of over 14,000 birds observed off Cape Ann, MA, on 7 Nov 1950, mentioned by Griscom and Snyder (1955), went unrecorded in New Hampshire though many could have passed through what is now considered New Hampshire waters. However, RNEB reports “6+ in the south-central part of the state almost to the Connecticut River” after the 25 Nov 1950 storm that brought 2500 to Cape Ann; 7 were found at Westville (D. Crouse), and 1 was picked up alive at Seabrook (Mrs. S.R. Bailey) and released.

1950 to present. This species has to be considered rare in New Hampshire now, though there is no conclusive evidence of a change in its global status since 1950; the number of reports has declined sharply since 1990, possibly due to a sharp drop in the breeding population in Greenland. More systematic offshore observations are badly needed, especially from the Isles of Shoals and adjacent waters in March, April, and November. Strong late fall storms have produced several inland records, though almost none since 1980.

Fall and winter. Earliest known fall arrival is 1 at Star Island 25 Oct 1970 (A.C. Borror, R.W. Smart *et al.*). In non-flight years, numbers occasionally build up to the 10–50 range near the Isles of Shoals and at Jeffreys Ledge by the end of December. These numbers often remain fairly constant into February or in some years increase. Four hundred thirty-five were at Jeffreys Ledge 4 Feb 1968 (ASNH field trip), such a number possibly attributable to weather conditions farther offshore. There have been no fall reports at all 1973–1993 and only about 8 fall reports of single birds between 1993 and 2009; only slightly greater numbers have been found in winter.

In 1959, 1962, 1966, 1968, 1969, and 1970, there was some indication of a flight in the period from the first week of November through the first week of December. In these years greater than usual numbers were noted along the coast and a few birds were found inland. Such flights are always preceded by northeast storms. Indications of such flights are 50+ at the coast 14 Nov 1959 (J.B. Grant, R.R. Rathbone); 400 at Rye 10 Nov 1962 (M.A. Sanford) the same day 3000 were seen at Rockport, MA; 158 at Rye 3 Nov 1966 (L.G. Phinney *et al.*); 179 at Rye 10 Nov 1968 (E.W. Phinney); 1108 at Rye 3 Nov 1969 (L.G. and E.W. Phinney); and 828 along the coast 11 Dec 1970 (L.G. Phinney *et al.*).

Spring. Latest known record is 2 off Ragged Neck, Rye, 7 Apr 2001 (A. and B. Delorey).

Inland. Many were blown inland and found dead after a storm on 10 Nov 1962, including birds at Peterborough (W.P. Hill *et al.*) and Madbury (A.C. Borrer). Almost a month later, single birds appeared 7 Dec 1962 at: Exeter (J.P. Merrill), Salem (R. Walsh), Plaistow (Mrs. S.K. McHenry), Durham (*fide* A.C. Borrer), and Hopkinton (B. Bean). A storm 2 Nov 1966 produced records at the following locations during the subsequent 12 days: Durham (J. Wicks, D. Olsen), Madbury (J. Chase *et al.*), Stratham (G. French), Dalton (R. White), Tamworth (H. Damon), Berlin (P. Dougherty), Hollis (H. Hildreth), Auburn (R.W. Lawrence), and Gilford (H.B. Miller *et al.*). The Dalton and Berlin records were the first ever north of the White Mountains.

In 1968, 1 appeared at Hollis 5 Dec (N. Ward *fide* T. Richards), and 1 was at Strafford 6 Dec (M. Jenisch). After the great storm of 2–3 Nov 1969, inland reports in the next week came from Pike (*fide* T. Richards), Barnstead (M. Jenisch), Monroe (*fide* R.J. Bradley), Hooksett (*fide* R.W. Smart), New Hampton (R.W. Smart), Stratford (*fide* R.W. Smart), several at Barrington (*fide* H.M. Spinney), East Barrington (B.R. Hayes), Brentwood (*fide* A.C. Borrer), Charlestown (W.W. Kidder *et al.*), Gilman-ton (*fide* M. Pitman), and Derry (*fide* R.W. Lawrence).

In 1970, following a storm on 11 Nov, birds appeared over the next 2 days at Lee (2 birds, O. Earle), Plaistow (O. Earle), Kingston (J.E. Cavanagh), Wolfeboro (*fide* T. Richards), and Hopkinton (*fide* T. Richards). A bird probably blown inland by the same storm was found at New Hampton 22 Nov 1970 (R.C. Hebert). A single bird was found in Londonderry 31 Oct 1973 (W. Watts *et al.*) after a strong storm the previous day. A storm on 3 Dec 1990 blew 2 a couple of miles inland at North Hampton (T. Arter). One was inland at Wakefield 28 Nov 1993 (A.C. Borrer *et al.*). One was found at Canterbury 23 Dec 2012 after a strong southeast storm on 21 Dec 2012 (P.D. Hunt, A.J. Vazzano).

Common Murre *Uria aalge*

Status. Casual to occasional winter visitor in offshore waters; several times in late spring and 1 summer straggler. Some suggestion of an increase in numbers present since 2005, including 5 reports in June and July from the Isles of Shoals.

Early reports to 1950. Dearborn (1903) apparently had no specific records though he said it “appears off our coast in winter” because he only included it in his Supplementary List of species “more or less likely” to be found in the coastal region. The first certain state record was 1 at the coast 18 Apr 1948 (T. Richards, H. Siegler).

1950 to present. Fourteen reports along the mainland coast and at Jeffreys Ledge 1969–2011 between extreme dates of 10 October and 1 June other than recent late

spring and summer records from White and Seavey Islands. Found with increasing frequency since 2000. One was at Jeffreys Ledge on 1 Jun 1969 (R.W. Smart, E.W. Phinney *et al.*); an immature female was picked up dead at Rye 5 Nov 1969 (E.W. Phinney; UNH #4169-A); 3 at Rye 23 Nov 1969 (E.T. Densmore); 3 at Jeffreys Ledge 7 Feb 1971 (R.W. Smart *et al.*); 1 there 14 Nov 1971 (R.W. Smart *et al.*); 6 at the Isles of Shoals 24 Dec 1972 (L.G. Phinney, R.W. Smart *et al.*); 1 at Rye 10 Oct 1983 (D.J. Abbott); 1 found dead at Hampton 7 Feb 1999 (R.W. and M. Suomala *et al.*); 1 photographed at North Hampton 31 Dec 2000 (W. Clark); 1 at Rye Ledge 9 Mar 2001 (S.R. Mirick *et mult*); 1 at Jeffreys Ledge 15 Mar 2009, 10 there 14 Jan 2010, 3 there 27 Nov 2011, and 10 there 11 Dec 2011 (all E.A. Masterson). One at Rye Harbor 31 Oct and 1 Nov 2009 (S. Carlson *et al.*). Eleven at Jeffreys Ledge 10 Mar 2010 (S.R. Mirick, E.A. Masterson, R.A. Quinn).

Single birds were at White and Seavey Islands 22–27 Jun 2003 (R.W. Suomala *et al.*), 1 there 19 Jun 2004 (R.W. Suomala), 1 there 26 May to 29 Jun 2005 (both D. Hayward), 1 at Rye 23 Jul 2006 (S.R. and J. Mirick), and 1 there 13 Jun 2007 (D. and M. Hayward).

Thick-billed Murre *Uria lomvia*

Status. Rare fall and early spring visitor and winter resident in the coastal region and at the Isles of Shoals, principally well offshore. Casual inland.

Early reports to 1950. Thaxter (1870) mentioned “The murre that swim in little companies” in winter at the Isles of Shoals which were more likely to be this species than Common Murres at the time. Brewster (1882b) states that he “had examined” specimens taken on the New Hampshire coast, 1 of which was probably that taken at Rye Beach 28 Feb 1880 by H. M. Spelman (MCZ #292645). Surprisingly, Brewster (1924) had 5 records for the Lake Umbagog region that must have been brought there by winter storms or icing-up of lakes farther north: 2 found in Jan 1894, 1 in late Dec 1900, and 2 in Jan 1909. The first 3 were certainly in ME as probably were the last 2, but that is uncertain.

Allen (1903) mentions “one captured in an exhausted condition...within two or three miles of Hanover in February or March of 1894” (*fide* W. Patten) and a “second bird was said to have been taken there at the same time.” One of these may have been the bird or birds referred to much later by Lord (1918). Allen (1903) reported specimens of 2 taken at Lake Winnisquam in Nov 1889 (MCZ #48297 and #48298).

Dearborn (1903) considered it regular “along the coast from November until March, and [stated that it] sometimes comes to Great Bay and the Piscataqua.” His record in support of the 2 latter localities, however, was 3 found in the Oyster River, Durham, 26 Nov 1899, a year in

which many of this species were found at inland localities. Allen (1903) gives many more records for the “unusual incursion of these birds into the southern part of the state...during the last week of November, 1899,” as follows: 1 at Antrim (*fide* J.P. Melzer); 1 shot on the Connecticut River at Charlestown 30 Nov and another 1 Dec, 1 at Francetown 27 Nov (*fide* J.P. Melzer); 1 at Franklin Falls “about the last of November” (*fide* E.E. Webster); several taken on or near Lake Winnisquam at Laconia, Tilton, and Winnisquam; 3 shot at Meredith Neck on Lake Winnepesaukee (*fide* E.E. Webster); 1 found “near a pond” in Nashua about 27 Nov (*fide* J.P. Melzer); 1 found at Bean Hill in Northfield (*fide* E.E. Webster); and 2 shot at Tilton (*fide* C.F. Goodhue). In addition, Allen (1903) reports 2 others taken at Seabrook at about the same time.

Another large, but apparently more localized, incursion occurred 2 years later. As reported by Allen (1903), “...on November 30, 1901, Mr. H. T. Winchester observed numbers of small flocks...on Newfound Lake, about 100 birds in all. At sundown they began ‘peeping’, each flock to flock, and gradually gathered on some rocks on the south shore of the lake. They were very wary, and with some difficulty Mr. Winchester shot 2...” This is the largest concentration ever reported for the state.

Allan (1931) reports 1 in an unspecified state at the Isles of Shoals 12 Jan 1930. White (1932b) reports 1 picked up freshly dead at Seabrook 2 Jun 1931, the latest spring date known. L. R. Nelson collected 1 at Rye Beach 10 Mar 1936 which was in the mounted collection in the NHFG headquarters in Concord that was destroyed by fire 21 Apr 1984 (Swanson 1984). One was found at Rye 18 Apr 1948 (T. Richards).

As noted by Griscom and Snyder (1955) for MA waters, this species has ‘greatly decreased’ since the early decades of the 1900s, and it seems safe to assume that the same has been true for New Hampshire.

1950 to present. A slight increase in reports 1950–1970s followed by a moderate decline; few records since 2000.

Fall and winter. Earliest known arrival is 1 at the Isles of Shoals 2 Nov 1969 (D. J. Abbott) and 3+ at Rye 3 Nov 1966 (L.G. Phinney, J.E. Cavanagh *et al.*). Peak migration period is thought to be late November to late December, numbers and exact season varying widely from year to year. Occasional along the mainland coast at this season. Peak numbers appear to occur mid-January to mid-February, highest known counts being 45 at Jeffreys Ledge 7 Feb 1971 (R.W. Smart *et al.*), 11 at Hampton 11 Jan 1956 (N.L. Hatch *et al.*), and 10 at the Isles of Shoals 21 Feb 1972 (D.W. Finch *et al.*). An influx occurred mid-Jan to late Feb 1999 when 65 birds were reported along the mainland coast (v.o.), and 12 were found there 29 Jan to 6 Feb 2005 (v.o.).

Spring and summer. Numbers appear to drop sharply by late March as birds leave for the north. Peak known spring count is 7 at Hampton 13 Mar 1999 (S.R. Mirick). Latest known records, other than the Jun 1931 report, are 1 found dead at Hampton State Park 21 Mar 1962 (St. Anselm’s Collection #89), 1 seen at Hampton 25 Mar 1962 (A.C. Borrer), 1 near Star Island 1 Apr 2001 (D.J. Abbott *et al.*), possibly the same bird at White and Seavey Islands 25 Apr 2001 (D. Hayward, A. LeFrancois), and 1 at Hampton 7–25 May 2007 (S.R. Mirick, J. O’Shaughnessy *et al.*; photo). One was seen off White and Seavey Islands 12 Jul 1997 (A. Cook, S. Walker).

Inland. One report: Four found at Lake Francis, Clarksville 7–8 Dec 1950 (B.D. and T. Richards) after an easterly storm and possibly 1 of those birds found dead there the following spring.

Razorbill *Alca torda*

Status. Regular late fall, winter and early spring visitor and rare summer visitor at the Isles of Shoals. 2 summer records; unreported inland.

Early reports to 1950. The first known report for the state is that of Belknap (1792) who reported the “Murr, *Alca torda*,” on the authority of a Mr. Peck, using the Linnaean name long in use in Europe. Dearborn (1903) called it a “winter bird that is found in more or less abundance on the coast every year from November to March.” Allen (1903) had nothing to add, and Forbush (1925) merely called it “not uncommon in some winters on [the] coast of New Hampshire...” A mounted specimen of a female taken at Rye Beach 29 Oct 1938 by L. R. Nelson was on display in the NHFG headquarters in Concord until the building burned down 21 Apr 1984 (Swanson 1984). One was collected at Portsmouth 26 Nov 1940 (L.W. Harding; MCZ #295511).

As noted by Griscom and Snyder (1955) for MA, this species declined sharply from 1886 into the early 1900s but increased sharply 1947–1955. These population changes were likely reflected in New Hampshire waters also.

1950 to present. Uncommon to fairly common in late fall and winter. In 1965–1980 offshore boat trips averaged 1 or 2 per year during the season when this bird is likely to be present. The resulting sporadic reports are an inadequate basis on which to estimate whether the species has increased or not. More systematic observations are needed, especially at the Isles of Shoals.

Fall and winter. Earliest known arrival is 1 at Jeffreys Ledge 24 Oct 1980 (E.W. Phinney) though dates in the first 2 weeks of October are quite possible based on data from MA (Veit and Petersen 1993). Peak migration period is thought to be the month of November and early December. Numbers present in New Hampshire’s limited

area of offshore waters vary widely from year to year and within the same year due to weather conditions; peak numbers in this period are 84 seen from the mainland coast 23 Nov 2002 (A. and B. Delorey) and a probable 111 seen from there 28 Nov 2004 (S.R. Mirick *et al.*) during a storm. An exceptional 237 were seen from the coast 1 Jan 2003 (A. and B. Delorey *et al.*). The highest mid-winter counts are 25 off Seabrook 7 Jan 2008 (T. Bronson); 20 at Jeffreys Ledge 7 Feb 1971 (R.W. Smart *et al.*); 25+ there 26 Jan 1969 (ASNH field trip), 40 there 15 Mar 2009, and 57 there 14 Jan 2010 (both E.A. Masterson); and exceptional counts of 210 off New Scantum, Rye, on 9 Feb 1999 (D.W. Finch *et al.*), and 312 at Jeffreys Ledge 17 Jan 2002 (D.J. Abbott, D.W. Finch). It is thought that it begins to move back north in February and early March.

Spring. The only known reports after April are 1 at Seabrook 22 May 1955 (S.H. Smith *et al.*); a breeding-plumage adult at Jeffreys Ledge 30 May 1968 (ASNH field trip); 1 off Little Boar's Head, North Hampton, 27 May 1994 (W.G. Ellison *et al.*); 1 off Rye 21 May 1999 (S.R. Mirick, A.C. Borrer *et al.*); 1 at Star Island 30 May 2009 (S.R. and J. Mirick); and 1 near the Isles of Shoals 8 Jun 2003 (B. Griffith, M.G. Harvey). One was at White and Seavey Islands 17 May to 8 Jun 2000, 2 there 9 Jun 2004, 2 there 11 Jun 2000, 1 there 16 Jun 2005, 1 there 1–22 Jun 2002, 1 there 29 May to 8 Jul 2006, and 1 there 22 May 2007 (all D. Hayward *et al.*).

Summer. Three records: a possibly sick, oiled, or injured bird at Rye 16 Jul 1962 (C.S. Robbins), possibly the same bird present there the prior 21 Mar; 2 at White and Seavey Islands 8 Jul 2001 (R.W. Suomala *et al.*); probably the same bird seen there intermittently 8 Jun to 18 Jul 2007 (D. and M. Hayward).

Great Auk *Pinguinus impennis*

Status. Extinct, probably since 1844 or shortly thereafter. The best evidence for its occurrence in New Hampshire as a living species is its inclusion in the list by Belknap (1792) without comment as “Penguin, *Alca impennis*.” This suggests that it may have been rather common in coastal waters at the time which would not be surprising. Allen (1903) stated that it “doubtless occurred on our shores” in former times, and later he (1909) said it was “[f]ormerly a winter visitor coastwise.” Goodhue (1922) said he did not doubt it had formerly occurred in winter. Greenway (1958) notes that bones have been found in Indian kitchen middens as near as 4 islands in Casco Bay, ME, and at Plum Island, MA, only about 4 miles south of the New Hampshire state line. This species apparently preferred rocky to sandy coastlines for both feeding and breeding and so must have been a regular seasonal migrant and winter resident at the Isles of Shoals and possibly an occasional summer resident there. In Apr 1976,

bones of this species were found in a kitchen midden at Sam Brown-Hunt's Island in the Hampton–Seabrook marshes (B. Hornbeek); the bones were identified by Dr. R.A. Paynter, Jr., of the MCZ.

Black Guillemot *Cepphus grylle*

Status. Fairly common spring and fall migrant and winter resident in the coastal region, particularly at the Isles of Shoals and adjacent waters. Regular summer resident at the Isles of Shoals with 1 breeding record at Star Island. One inland record.

Early reports to 1950. The first report that probably applies to New Hampshire as well as ME is that of Thaxter (1870) who noted “sea-pigeons,” as the species was then called, at the Isles of Shoals in winter. Dearborn (1903) and Allen (1903) both called it a winter visitor off the coast, the latter author also listing 1 taken there in Dec 1888 (*fide* A.A. Eaton). Goodhue (1922) mentions it but added nothing. Forbush (1925) referred to it as a “rather uncommon winter visitant coastwise in New Hampshire.”

Allan (1931) mentions it for an unspecified state at the Isles of Shoals 24 Feb 1930. Wright (1937a) had single Isles of Shoals records for ME 23 Jun 1935 and 20 Jul 1936 and reports an adult at Square Rock, New Hampshire, 20 Jul 1935. Jackson (1947) adds a report of “Two birds...seen in the latter part of July, 1938, following a severe northern storm” but without indicating in which state.

The only known inland record is of 1 found alive and healthy in Sanbornton 21 Dec 1921 (G. Quimby). It was taken to a lake at a game farm in New Hampton and was seen to fly away under its own power the next day (*fide* G. Proctor).

1950 to present. Great increase in the number reported due to intensified field work, but an increase in the number present is also suggested (WAP 2005). Breeding established at the New Hampshire Isles of Shoals. Population trend listed as unknown by Hunt (2012).

Fall. Earliest fall reports are 2 at Rye 20 Aug 2005 (S.R. Mirick *et al.*) and a surprising juvenile in the Piscataqua River in Newington 29 Aug 1997 (M. and M. Amaral, M. Bartlett). Several other reports in the first week of September, becoming occasional along the coast by the end of September through October. After the first week of November single birds or small flocks are noted irregularly along the mainland coast until year-end. At the Isles of Shoals, early fall arrivals are indistinguishable from the few summering birds but are thought to appear by the last 2 weeks of October. Numbers there typically build up to the 10–40 range by the end of December, the highest known count in this period being 62 on 20 Dec 1967 (CBC, L.G. Phinney *et al.*); some of those were in ME waters.

Winter. Present at the Isles of Shoals and adjacent eastward waters through February. Highest counts are 47 at the Isles of Shoals 30 Jan 1972 (D.J. Abbott *et al.*) and 58 there 7 Feb 1971 (R.W. Smart *et al.*). Counts in the 2–10 range are regularly noted along the mainland coast at this season. Several records for March.

Spring. Peak migration period is the month of April based on data from ME (Palmer 1949); 6 found at the Isles of Shoals 29 Apr 1979 (E.W. Phinney) and 23 at White and Seavey Islands 25 Apr 2001 (D. Hayward, A. LeFrancois). After April only a few birds usually remain at the Isles of Shoals, though 21 were at White and Seavey Islands 2 May 1999, 28 were there 17 May 2000 (D. Hayward), and 15 near Lunging Island 8 May 2004 (R.W. Suomala *et al.*). Records from White and Seavey Islands include 4 there 1 May 2006 and 8 there 25 May 2006 (both D. and M. Hayward *et al.*). Latest records along the mainland coast are 1 at New Castle 15 May 1969 (E.A. Steele), 1 at Hampton 20 May 1970 (E.W. Phinney *et al.*), 1 to 3 at Rye 1–20 Jun 2003 (M.G. Harvey *et al.*). One was at Jeffreys Ledge 3 Jun 1979 (D.J. Abbott), possibly a bird from the small breeding colony at Smuttynose Island, ME, rather than a migrant.

Summer and breeding. Taber (1955) was the first to suggest that this species might be nesting at the Isles of Shoals, reporting 2 off Smuttynose Island, ME, 23 Jul 1955. From then until 1967 it was noted there irregularly in summer, but it has become regular since 1967; numbers range from 1–15 birds which spend most of their time just over the state line in ME. Though strongly suspected since 1970, breeding was not confirmed until Jun 1972 when 2 nests were found at Smuttynose Island (A.C. Borror). The birds were observed feeding “from Duck Island to the south shore of Star, but did not act as if they were trying to breed anywhere but on Smuttynose.” Up to as many as 6 pairs are thought to have nested there nearly every year since. The first and only known nesting in New Hampshire was discovered in Jul 1985 at Star Island (E. Ring) but was not followed in 1986, 1987 (Foss 1994), or since.

Usually present in summer at Star Island 1990 to date. Five to 8 were at White and Seavey Islands 7–24 Jun 2000 and 3 were still there 21 Jul 2000 (D. Hayward, M. Charette), 1–3 present there through Jun and Jul to 6 Aug 2001 (D. Hayward *et al.*), 3–5 there 14 Jun to 11 Jul 2004 (M. Barney, D. Hayward *et al.*), 13 there 14 Jun 2005 (M. Barney *et al.*), 19 there 5 Jun 2006 (D. and M. Hayward), and 7 there 21 Jun 2007 (D. and M. Hayward). The only known pre-2000 mainland coast record at this season is a juvenile at North Hampton 20 Aug 1960 (R.R. Rathbone) apparently blown there by high winds. Since 2000 has been reported annually along the mainland coast late May through August including juveniles in the first 2 weeks of August that presumably were raised nearby.

Atlantic Puffin *Fratercula arctica*

Status. Probably a regular winter visitor to Jeffreys Ledge. Reported regularly 1971–1981 suggesting both an increase in field work and recent population growth just to the north. Since 2000 found often in summer at the Isles of Shoals.

Early reports to 1950. The first New Hampshire record is that of Belknap (1812) who listed the “Sea Parrot, *Alca arctica*.” The next report that probably relates to both New Hampshire and ME is the mention of “sea-parrots” at the Isles of Shoals in winter by Thaxter (1870). Dearborn (1903) stated that “Puffins are regular winter visitors off [the] coast. They were reported common at [the] Isles of Shoals last winter. Judging from the fact that most of the local collections lack them, I infer that comparatively few are killed.” Allen (1903) called it an “uncommon winter visitor” at the Isles of Shoals. No further reports until 1971.

1950 to present. Increase in reports, likely in part due to the Project Puffin recolonization efforts on ME islands in Muscongus Bay beginning in 1973 and in Penobscot Bay in 1984.

Fall to winter. Reports prior to November may well be lingering or summering birds rather than true migrants: 1 at Jeffreys Ledge 26 Sep 2009 (J. Lambert), 1 east of the Isles of Shoals both 1 and 5 Oct 2008 (P. Reynolds *et al.*), and 1 “migrating down the coast” 4 Oct 1978 (E.W. Phinney). The next earliest are 2 off New Castle 10 Nov 1974 (L.G. Phinney *et al.*). There is a cluster of reports in mid-November and irregularly into late January. Latest known winter reports are 1 at Jeffreys Ledge 15 Feb 1981 (K.C. Elkins *et al.*) and 3 near there 14 Mar 2004 (S.R. Mirick, D.J. Abbott *et al.*).

Late spring and summer. Presumed nonbreeding lingerers. One seen off Odiorne Point State Park, Rye, 15 Jul 1978 (D.J. Abbott). One seen at 40 feet off Rye 16 Aug 1973 (D. Bolles III; D. Bolles, Jr.). One just offshore near Rye 23 Aug 1985 (ASNH field trip). A sharp increase in reports since 1995, presumably related to significant increases in the coastal ME breeding population after successful recolonization efforts. Single birds seen at Star Island Rye 9 Jun 1999 (R.W. Suomala) and very possibly the same bird at White and Seavey Islands 15 Jun 1999 (D. Hayward, D. Trested). There are 9 reports of at least 15 individual birds at White and Seavey Islands from the last week of May through early August, some in each year 2000 through 2009 (D. Hayward *et al.*). One was at Hampton 10 Jun 2007 (S.R. and J. Mirick), 3 at Jeffreys Ledge 25 Jul 2008 (E.A. Masterson), and 2 at North Hampton 24 Jun 2009 (S.R. Mirick). Puffins frequently nest at tern colony islands which may explain their recent presence at White and Seavey Islands in summer, but it is thought there might not be enough rock cavities for them to nest there (S. Kress *fide* R.W. Suomala).

ORDER COLUMBIFORMES

FAMILY COLUMBIDAE

Rock Pigeon *Columba livia*

Status. Introduced. A permanent resident nearly statewide, common to abundant in most cities and towns, and breeding ferally in many areas. Infrequently found away from human habitations.

Early reports to 1950. Belknap (1792) did not mention it, and Allen (1903) omitted it from his list of introduced species though it must have been present since Dearborn (1905) refers to the “tame blue pigeon” at Northfield. It was probably introduced to New Hampshire in domesticated form in the early 1800s since Palmer (1949) reports that it was already “feral and numerous” at Portland, ME, by 1858 “and very probably [was] so much earlier.” Allan (1931) noted single birds at the Isles of Shoals in unspecified states in each of the summers of 1929 and 1930.

1950 to present. Now least numerous from the White Mountains northward outside of urbanized areas and appears to be absent from this part of the state in winter. In summer a few birds wander occasionally into remote or unsettled areas, such as 1 at Black Mountain, Jackson, 12–20 Aug 1966 (J.R. Warren). A small permanent resident population regularly lives along the mainland coast. The wild population is continuously augmented by the steady introduction of escaped or abandoned domesticated birds and lost birds from pigeon races. Annual breeding bird surveys and CBCs showed a steady increase in the population statewide 1960 to about 1980 after which it appears to have declined slightly.

The breeding distribution of this species in New Hampshire roughly corresponds to the human distribution, being concentrated in the coastal region, the southern Merrimack River valley and the Connecticut River valley north to Lancaster; a total of 59 confirmed or probable breeding atlas blocks were documented in the 1981–1986 *Atlas of Breeding Birds* (Foss 1994). BBS data show an annual population trend decline averaging under 1% per year for 1966–2009 and 1999–2009 (Appendix IV).

A few have strayed to the Isles of Shoals. One was at Star Island 24 May 1964 (T. Richards), and 1 was found there freshly dead 31 Oct 1970 (D.W. Finch).

Band-tailed Pigeon *Patagioenas fasciata*

Status. Vagrant from the west; 2 records. One adult at Keene 3–15 Jan 1972 (Mr. and Mrs. J. Ward *et mult.*; photograph in NHAQ 25 [2]: 61). One was at North Conway 24–30 Mar 1991 (N. Stedman, C. Lewey *et al.*; photo in

N. H. Audubon 27 [4]: 5). Three records for ME (ME-BRC website, P.D. Vickery pers. comm.) and 2 records for MA in 1995 and 1996 (BO database 2010).

White-winged Dove *Zenaida asiatica*

Status. Vagrant from the south. Two records. One was at Dover 1–3 Jul 2006 (D. Hubbard *et mult.*; color photo on cover of NHBR 25 [2]). One came aboard a whale-watch boat on a pelagic trip to Jeffrey’s Ledge on 28 May 2011 (S.R. and J. Mirick, J. Woolf); the bird remained on the boat until it returned to Rye Harbor at which point the bird flew off (photos NHBR 30 [1]: 48). There are records north to Ontario, New Brunswick, and Nova Scotia, possibly due in part to the recent establishment of a thriving population in Florida (Veit and Petersen 1993). Over 35 records for MA (Veit and Petersen 1993, BO database 2010), 1 hypothetical record for VT (C.C. Rimmer pers. comm.), and over 30 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Mourning Dove *Zenaida macroura*

Status. Regular, common spring and fall migrant and summer resident statewide. Regular winter resident from the White Mountains southward and at a few localities to the north. Greatly increased since 1850.

Early reports to 1950. The first state report is that of Belknap (1792) who noted the “Turtle Dove, *Columba carolinensis*,” as distinct from the Passenger Pigeon without further comment. Richards (1954) has suggested that the Mourning Dove was reduced over much of its range in the early 1800s by the excessive shooting that finally exterminated the Passenger Pigeon, and this was surely the case. Goodhue (1877a) stated that it “[m]ay occur, but I have not met with it yet.” Brewster (1925) had only 1 record in the Lake Umbagog region in 1887, but in ME.

Dearborn (1898) called it “irregular and rather uncommon” in Belknap and Merrimack Counties; he did mention a report from Franklin (*fide* G. Stolworthy). In the coastal region, Dearborn (1903) considered it of “irregular but not rare occurrence” and noted it as present April to 15 December but unknown to winter. In Northfield, Dearborn (1905) called it “rare.” Batchelder and Fogg (1899) called it “occasional in summer” at Manchester.

Allen (1903) considered it a “not uncommon summer resident of...the southeastern part of the state, along the seacoast and...in the bottom lands of the Merrimack valley...about Concord and further up at Franklin.” Though “quite common at Seabrook” and breeding there (*fide*

A.A. Eaton), and having recently increased at Hollis (*fide* W.H. Fox), it was then of only “occasional occurrence in the southern Connecticut valley,” there being only 2 spring and summer records in 1898 and 1899 at Charlestown (W.M. Buswell). A Jun 1894 report from Waterville (*fide* F.H. Allen) was considered a straggler. The species is absent from Howe’s (1901–1903) list for Bridgewater, from Wright’s (1911) list for the Jefferson area, from Lord’s (1918) list for Hanover, and from Marble’s (1927) list for the Crawford Notch area.

Danforth (1924) reported 2 at Jaffrey 30 Apr and 1 May 1916, the only records then known for the town. In contrast to his 1877 remarks, Goodhue (1922) called it “rather rare in central New Hampshire outside the Merrimack Valley where it is a summer resident,” breeding regularly near Concord and Boscawen, but he had “no evidence that [it] remain[s] through the winter.” The first wintering record for the state appears to be that of a single bird at Hampton Falls at least until 14 Feb 1925 (W.E. Cram, F.S. Moulton). Forbush (1927) called it a “[r]are migrant and summer resident, chiefly in the southern part...” of the state which “may winter rarely.”

White (1924b, 1937) called it an “uncommon and irregular summer resident” in Concord, but comparison of his 2 accounts indicates a noticeable increase between writings; wintering was still unknown there. Bagg and Eliot (1937) report 3 at East Westmoreland 6 Apr 1928, an “evidently breeding pair” near the Connecticut River 26 Jun 1931, and 1 on 2 May 1936 (all L.O. Shelley). A nesting pair at South Wolfboro in the summer of 1935 (R.G. Carpenter 2nd) constituted the northernmost then-known breeding record for the state.

Silver (1957) noted that “[c]ommencing in the early 1940’s, reports of [its] presence began to appear more or less regularly, and [it was] probably more common than the records show,” since many of her correspondents “... had regularly observed [it] but few had made written records of their observations.” One of the first reports north of the White Mountains was 1 at Shelburne 7 Oct 1941 (A. Bagg) as reported by Fobes (1959), and the first known record for the Jefferson region was 1 seen in Apr 1944 (*fide* D.J. Lennox). As Silver (1957) reported, “In 1949 a dove appeared at Randolph in the White Mountains on December 22, and in 1952 one was seen in the town of West Stewartstown. By 1953 they were seen quite commonly around Whitefield, also in the White Mountains.” Allan (1931) reported 1 at the Isles of Shoals in an unspecified state 30 Aug 1929, the first known published record for those islands.

The above accounts outline a steady pattern of increase and spread northward through the state, both as a summer resident and breeder and as a winter resident at least from 1850 to the 1950s. The increase seems to have accelerated since 1935–1940.

1950 to present. Continued rapid increase, especially in winter and in northern sections. Breeding population listed as increasing by Hunt (2009b).

Spring. Regular presence of wintering birds makes extreme early migrants indistinguishable, but the first ones are suspected by the last week of February in some years. Earliest known arrival at Pittsburg at the northernmost tip of the state is 1 on 7 Mar 1957 (F.T. Scott). Mean arrival date for birds believed not to have wintered 1952–1980 is 10 March, and peak migration period is typically the last 2 weeks of March and the first 2 weeks of April. Peak count in this period is only 15 which means little since the species is not gregarious at this season and local breeders may have been included. Latest migrants are thought to have arrived by the first week of May; latest arrivals cannot be told with certainty from summer residents. Records for the Isles of Shoals are 2 at Star Island 11 May 1969 (ASNH field trip) and 1 at White and Seavey Islands 20 Jun 1998 (J. Ellis, D. Hayward).

Summer and breeding. This species can now be found statewide in summer, though the population density is slightly lower from the White Mountains northward. This species has a very extended breeding season, rarely nesting as early as March and juvenile-plumaged birds occasionally being seen as late as December (*fide* R.A. Quinn). Breeding was confirmed or thought probable at 128 atlas blocks in the 1981–1986 *Atlas of Breeding Birds* (Foss, 1994). Abundance indices based on breeding season call/count surveys done over 8 consistent survey routes averaged 6.3 birds 1966–1972 increasing to 10.8 in 2005–2010 (E.G. Robinson at NHFG pers. comm.). BBS annual population trend data show a modest increase of 3.5% per year 1966–2009 but a decline of 0.8% per year 1999–2009 (Appendix IV). While no exact elevation records are available, it can be expected up to at least 1000 feet and occasionally higher, as 3 seen on Black Mountain, Jackson, 30 Jul 1966 (J.R. Warren). By late July or early August, family groups begin to gather together into flocks in the range of 20–40 birds. Two possible early migrants or postbreeding dispersal birds were at White and Seavey Islands 28 Jul 1999 (D. Hayward, D. Trested).

Fall. The earliest migrants are suspected by the first week of September, and large flocks sometimes accumulate at favored localities. Examples are 200+ at Merrimack 28 Sep 1963 (R.W. Lawrence *et al.*), 250 at Kensington 2 Sep 1971 (S.H. Perry), 300–315 at Concord 7–12 Oct 2002 (M. Suomala *et al.*), and 250 on 15 Oct 1999 (R. Crowley) as far north as Conway. Peak migration period is typically the last 2 weeks of September and the first 3 weeks of October. In mild seasons, numbers in the 25–50 range occasionally remain into mid- or late November, especially in the coastal region. High count in that period is 50 at Bow 22 Nov 1970 (H.B. Miller). By mid- to late December, concentrations sometimes appear again at favored

localities and at feeding stations. Five at Littleton 6 Dec 1971 (R.J. Bradley *et al.*) and 16 there 17 Dec 1972 (R.J. Bradley *et al.*) are the first known records for north of the White Mountains in early winter; subsequently, numbers have increased significantly.

Two fall records for Star Island: 2 on 3 Nov 1968 (W.C. Chisholm) and 1 on 21 Nov 1964 (ASNH field trip). As reported by Kennard and Kennard (1967), a bird banded in Bedford in the summer of 1962 was shot in South Carolina the following November.

Winter. Numbers present from late December to early March can vary with the severity of the weather: at least 300–350 birds were present statewide during the mild 1966–1967 winter. The number successfully wintering since 1950 has greatly increased; a statewide census done 9–10 Feb 1980 (R.A. Quinn *et al.*) totaled approximately 3500, and statewide CBC totals averaged 4161 in the 1990s and 3528 in the 2000s.

Passenger Pigeon *Ectopistes migratorius*

Status. Extinct. Formerly an abundant spring and fall migrant and summer resident. Probably bred regularly, in some years in great concentrations; originally probably bred statewide but after 1800 principally from the White Mountains northward. While known in winter as far north as MA, there are no known New Hampshire records at that season. Extreme verified dates are 31 March to 10 October. The last specimens for the state were taken in 1885; sight observations that were probably correct are recorded for 1890 and 1891.

Reports. One of the most numerous species ever known on the face of the earth, its extinction is entirely due to humans. As the story of its general status and decline in New England and the rest of the United States is fully reported elsewhere (Schorger 1955), the following account includes only New Hampshire records.

While no report survives, it must have been abundant into countless millions in what is now New Hampshire in the precolonial period. It was such a common feature of everyday life in colonial times that it was hardly mentioned in many early town histories, or if mentioned, was so only imprecisely as to dates or numbers. Several authors, especially Forbush (1912), have shown that it was greatly reduced in New England by 1850 from its numbers in 1650, and this must have also been generally true in New Hampshire. Specific records for the state are as follows:

1760–1770: Walpole; netted there in great numbers in this period (Aldrich 1880); this appears to be the earliest record for the state.

About 1780: Piermont; the Tyler brothers saved the settlement from starvation after the crops had been de-

stroyed by an infestation of caterpillars by taking over 5000 birds in 10 days during a period when the air was “black with flocks” (Powers 1880; Sanborn 1875).

1792: Belknap (1792) noted that “Wild pigeons come in the spring from the southward, in great flocks, and breed in our woods, during the summer months. They choose the thickest parts of the forest, for the situation of their nests...Since the clearing of the woods, the number of pigeons is diminished.”

Early 1800s: Weare; Little (1888) reported that “Pigeons used to fly by the millions, and many were caught in Weare...Jacob Follansbee said that when he was a boy he counted seventy flocks of pigeons one morning before breakfast, and there was at least a million in a flock.” While such an account is probably an exaggeration, he may have seen several million birds that day.

1816: Surry; very abundant there that year (Kingsbury 1925).

1817: Boscawen and Webster area; “Pigeons by the millions” on 17 Apr (Coffin 1878).

1817: Temple; Blood (1860) reports, “Immense was the emigration in the spring of 1817. The sky was clouded from mountain to mountain. When walking in the woods, you thought it thundered; a flock of pigeons had started up. No shot was wasted; pebblestones would bring down three at a time, and Herman Bachelder lowered six with a single charge...”

1815–1820 period: Coos County; Crawford (1845) cites the report of a relative: “At one time I went with three other men into the woods, on to a small ridge of land, where the pigeons had made their nests and hatched their young ones, and on half an acre of land, in some [American B]eech [*Fagus grandifolia*] trees, we found them in great abundance. We would chop one tree and fall it against another and that would cause the young ones to drop from both trees. Some trees had forty nests in each of them, with two young ones in each nest...There we worked until each of us had as many as we could carry, in a bag, home on a horse’s back...”

About 1819: present in the state in numbers (Warden 1819, Vol.1)

1840s: a breeding area at least a half mile wide was found in northern New Hampshire along the Canadian border (Weeks 1888).

1840s: Swanzey; “[T]hey were so numerous that some men did quite a business catching them with nets” (Read 1892)

1850: Lake Umbagog; the numbers there were undiminished from previous decades (Brewster 1925).

1860: Dover; a flock was seen 31 Mar by Daniel Osborne (Earle 1963).

1860: Webster area; confirming the above report from Dover, Goodhue (1922) recorded that "The last day of March 1860 the writer saw immense flocks...on their way north; some flocks were so long I could not see either end extending as they did from horizon to horizon. There were many smaller flocks of maybe 50 to 100 or more birds passing nearly all the time. When a large flock passed low down, the noise made by their wings was like that of a mighty wind through the bare branches of the forest."

About 1860: Conway; "Great numbers nested on the Rattlesnake Range of hills in that township..." (Allen 1903).

1860s: Concord; still being trapped in some numbers as recalled by W. W. Flint (White 1924b, 1937).

1860s: Acworth; a large flight from the southwest passed the town in April of a year in "the early or middle sixties" (Hemphill 1922).

1865–1870: Bedford; the last of the pigeon trapping there was in this period; up to 350 were occasionally netted at one time and as many as 12,000 were taken in a single season prior to this time; many were taken alive and fattened on corn before being sold (Riddle *et al.* 1903).

1869: Coos County; common there that summer (Maynard 1871).

1869: 2 collected on the Isles of Shoals (see below).

Before 1870: Warren; presence noted (Little 1870).

To 1870: Amherst; "The abundance of wild pigeons... (continued) so late as the year 1870...Their flocks, as I once saw them flying past our farm, reached two or three miles in length, flying abreast and in successive rows, with a noise of their wings like a mighty wind. Each summer during probably forty or fifty years my father and my three brothers caught many in nets..." (Locke 1916).

Early (?) 1870s: Hollis; "...formerly very common at Hollis in the southern part of the state and used to be netted extensively in the '70's" *fide* W. H. Fox (Allen 1903).

After 1870: Lake Umbagog; "During the following decade (1850–1860) they diminished rapidly in numbers and after 1870 no (great) multitudes...were ever seen." (Brewster 1925).

1874: Hollis; first spring migrants were seen there 6 Apr. (Fox 1876)

1874: Webster area; nests were found on 2, 16, 19, and 22 May; "During the early '70's, flocks of from 6 or 8 to 50 birds were met with every fall. They were espe-

cially fond of buck wheat and I could nearly always find them some time in the day gleaned over the ground or dressing their plumage in some dead tree near by a field of this grain." (Goodhue 1922).

1874: Lake Umbagog; about 30 seen by W. Brewster and W. Stone at Leonard's Pond 18 Aug. (Brewster 1925).

1875: Hollis; first spring migrants seen there on 8 Apr. (Fox 1876)

1876: Hollis; first spring migrants seen there on 2 Apr. (Fox 1876).

1876–1879: Lake Umbagog; "Passenger Pigeons ceased to appear regularly or frequently in the Umbagog region" in this period. (Brewster 1925).

1877: Webster area; "common summer resident; breeds..."; this description may apply more to the previous decade than to this specific year, but there was a significant flight in either spring or fall of that year. (Goodhue 1877a, 1877b).

1878: Exeter; it was still a common practice "to trap live wild Pigeons and then shoot them as they were released..." (Smith 1948).

1880: Hollis; the last reported nest for the state was found and the last flock seen in this town was recorded in this year *fide* W. H. Fox (Allen 1903).

1880: Nashua; late fall report there on 6 Sep. (Webb 1880).

1880: Isles of Shoals; in a letter dated 25 Sep, Celia Thaxter wrote of "wild pigeons" coming in autumn, but she may have been referring to years in the recent past rather than to that specific year. (Fowler 1960).

1881: Acworth; a juvenile was collected there 10 Oct by G. G. Dickey (Allen 1903).

1882: Cambridge; "I saw a Pigeon today near Lakeside Hotel in the township of Cambridge, New Hampshire. The species has now become of very rare occurrence in the Umbagog Region." (Brewster 1925).

1882: Concord; noted by F. Battles as having become scarce there by this year. (White 1924b).

1884: Concord; "Mr. [F. S.] Moulton killed his last on September 2, 1884, in Concord." (White 1924b).

1884: Webster; Goodhue (1922) notes that "The last Wild Pigeon I ever saw in the flesh...was shot near my place in Webster about October 1st, 1884..."

1885: Concord; the last bird remembered by W. W. Flint was 1 "shot near his house in the summer of 1885, when the birds were already rare." (Allen 1903).

1885: near Concord; "Gen. (F.) Battles saw his last Pigeons in 1885, near the Merrimack River, a little south of Concord...he determined when this flock of seven birds flew up from the interval, to obtain a

specimen, and this he did after following the flock through a heavy piece of old-growth pine..." (White 1924b). This and the previous report the same year are the last substantiated records for the state.

1890: "Mr. Ferrin tells me that he saw a solitary Wild Pigeon near his farm in Errol sometime in the summer. He says that it was the only representative of the species that he has seen or heard of during the past five or six years" (Brewster 1925). While the possibility of this bird having been a Mourning Dove cannot be totally eliminated, the likelihood seems remote given the virtually total absence of that species from the Lake Umbagog region at that time.

1891: Greenfield; 7 birds were seen feeding in a wild cherry tree at some time in the fall. (Schorger 1955). There is an outside chance that these birds were misidentified Mourning Doves, but that seems unlikely.

The latest substantiated records for Passenger Pigeons in ME and MA were in 1896 and 1894 respectively (Palmer 1949, Griscom and Snyder 1955), which suggests that occasional birds were probably present in New Hampshire, but not recorded, at least as late as the early 1890s.

In summary, the last great flocks were recorded about 1870, numbers declined very sharply in the last part of that decade, the last known nesting was in 1880, and only sporadic individuals were seen after that. As elsewhere in the country, the end in New Hampshire came much more suddenly than anyone suspected that it could. As reported by Silver (1957), "No official attempt [was] made to protect [it] until 1869, when a law providing a closed season from January 31 to August 15 was enacted. It was repealed after four years, and no further attention was given [it] until [it] was afforded complete protection in 1895, fully 10 years after the last pigeon [may have been] gone."

Dearborn (1898) reported for Belknap and Merrimack Counties that "Wild Pigeons, formerly so abundant as to afford a lucrative employment to numerous gunners and netters, are now practically unheard of in New Hampshire. I have neither seen nor known to be seen a single pigeon in the last ten years. Fifty years ago they bred here,

and I have been given a clear description of a nest found in Merrimack County. It was in a pine tree, and constructed so loosely of sticks that the eggs could be seen from the ground through the bottom." Five years later, Dearborn (1903) wrote of the coastal region that "[t]hough decreasing in numbers, pigeons were not rare up to within twenty-five years [*i.e.*, about 1878]. I have not known one to be killed or even seen for at least fifteen years [*i.e.*, since 1888]. This section used to be a favored resort for pigeons, and many fell victim to net and gun..."

Remarks. The assumption by Silver (1957) that the location of the great nesting described by Wood (1634) was possibly in Carroll County, New Hampshire, is in error as that locality has previously been determined to be in Essex County, MA (Townsend 1905, Forbush 1927, Snyder 1955).

Belknap (1792) and others have referred to the remarks in the journal of Richard Hazzen who surveyed the province line between MA and New Hampshire in 1741 and who reported passing through a great nesting area that year. But Belknap (1792) records that the locality "was on the western side of the Connecticut river, and eastward of the Deerfield river," and thus clearly not within the present-day political boundary of New Hampshire.

Specimens. Two specimens shot at the Isles of Shoals, apparently on a New Hampshire island but by an unknown collector, 27 Aug 1869 (MCZ #47767 and #47768). Fifteen specimens are housed in collections in the state, only 1 of which has complete data: a locally-raised juvenile collected at Acworth 10 Oct 1881, which was at the Acworth-Silsby Free Public Library, Acworth, in 1972. Those without data are located as follows: Concord Public Library, Concord (2); NHFG Headquarters, Concord (2); Alton Town Hall (1); Minot-Sleeper Public Library, Bristol (1); the Annie E. Woodman Institute, Dover (1); 5 at the ASNH headquarters in Concord and 2 at the Society's Paradise Point Nature Center in Hebron. A bird thought to have been taken at Greenland or Stratham on a date now lost was supposedly sent to the Smithsonian Institution, Washington, DC, but it cannot now be found there (G.E. Watson pers. comm.).

ORDER CUCULIFORMES

FAMILY CUCULIDAE

Yellow-billed Cuckoo *Coccyzus americanus*

Status. Regular but uncommon spring migrant, summer resident and breeder in small numbers, and fall migrant north to the foothills of the White Mountains, chiefly along the river valleys and in the coastal region. It has been reported more frequently and appears to have expanded its range in the state since 1900.

Early reports to 1950. The first mention of this species for the state appears to be that of Goodhue (1877a) who stated that it “Probably occurs, but [I] have never taken it yet.” Dearborn (1898) reported that it was “not common” in Belknap and Merrimack Counties, adding that “The only pair I ever saw alive was in a piece of inundated woods in Northfield, June 24, 1897. They appeared to be located there, though I think had not begun a nest. Another was brought in by a boy who said he found it dead, the same season.” Batchelder and Fogg (1899) termed it a “rare summer resident” at Manchester but gave no specific dates.

In the coastal region, Dearborn (1903) referred to it as “an irregular summer visitant” and noted that “Mr. [S. A.] Shaw has taken it at Hampton.” Howe (1901–1903) collected a female where the Cockermouth River empties into Newfound Lake 4 Jul 1900, for what was then by far the northernmost state record. Thayer (1903) called it “only...a rare autumn migrant” near Mt. Monadnock at Dublin and later (1912) considered it “uncommon and irregular” there.

Allen (1903), in what is probably the most accurate statement of its status at the time, called it a “very rare summer resident, barely reaching the south-central parts of the state in...the valley bottoms and [at] the coast. A few of these birds appear to follow up the Merrimack River valley for some distance, and perhaps with more regularity than the few records might seem to indicate.” In addition to several of the reports listed above, he mentioned “one killed a few years ago at Concord” (*fide* W.W. Flint); 1 or more records for Charlestown (*fide* W.M. Buswell); a record for Seabrook (*fide* A.A. Eaton); and reports from Hampton Falls (W.E. Cram) in Sep 1897, Sep 1899, and Aug 1900.

The first record for the White Mountains was 1 found at Crawford House 26 Jul 1907 (N.C. Brown, R.M. Marble) as reported by Marble (1927). Wright (1911) had no additional records for the Jefferson region but noted a bird just across the Connecticut River in Guildhall, VT, 18 Sep 1899; at the time, this was the northernmost known report for the Connecticut River valley. Goodhue (1922)

reports that it was first found near Webster in 1902 when a pair nested, and 1 was seen as late as 10 Oct; he considered it “...very rare and local in the central part of the state” at the time of writing.

In the Concord area, White (1924b) called it “uncommon” and had only the old report by Flint mentioned above. Thirteen years later, White (1937) still called it “uncommon” at Concord but added reports of 1 seen at St. Paul’s School “a few years ago” (G.M. Milne) and 1 on 18 Jun 1932 (B.B. Warfield, F.B. White). Shelley (1936a) reported a female found dead in Winchester 25 Jun 1935. Griscom (1955) noted that in 3 summers he spent in southern New Hampshire in the early 1930s, he only saw this species once, in Jul 1932. He continues that it had been “[i]ncreasing in recent years, [being] reported from Andover [1938 on, K.C. Elkins]; Goffstown; New Hampton [1945 on]; Sunapee Lake Region; Salisbury; Marlow [1950]; Pittsburg, 1 seen June 7, 1949 (F.T. Scott),” the latter being by far the northernmost known record at the time. Reports to RNEB in 1937–1949 include 1 at Andover 27 Jun 1938 (K.C. Elkins) where it was considered “rare so far north” and 1 at New Hampton 26 Aug 1945 (V.H. Hebert). No known records from the New Hampshire Isles of Shoals before 1950.

While the evidence is fragmentary, there appears to have been a significant northward expansion in numbers present and breeding from 1900 through the 1940s.

1950 to present. Breeding population trend considered stable to about 1980 but lately considered uncertain by Hunt (2012); still outnumbered 3 to 1 by Black-billed Cuckoo.

Spring. Earliest known arrival is 1 at Kensington 6 May 2004 (G.W. Gavutis, Jr.); first arrivals generally appear 15–20 May. A late migrant, peak migration period is typically the last 2 weeks of May and the first week of June. Latest probable spring migrants are 1 at Star Island 21 Jun 1972 (A.C. Borrer) and 1 at White and Seavey Islands 14 Jun 2005 and 24 Jun 2002 (both D. Hayward *et al.*). It is rarely reported from the White Mountains northward at this season; 2 such reports are the 1949 record from Pittsburg and 1 at Whitefield 31 May 2004 (I.C. MacLeod *et al.*).

Summer and breeding. Occurs sparingly in breeding season north in the Merrimack River watershed, including the central Lakes Region. Northernmost recorded localities in this watershed are Freedom, Madison, and New Hampton. One as far north as Conway 9 Jun 2005 (P. Brown *et al.*). A few are regularly present in the coastal region each year. In the Connecticut River valley, it apparently occurs north only to Walpole with any regularity

and occasionally to Enfield, though probable breeding was suspected at Hanover in the 1981–1986 period (Foss 1994). Only confirmed or probable in 11 atlas blocks in the *Atlas of Breeding Birds* 1981–1986, all but 4 of them in Rockingham and southern Strafford Counties (Foss *op.cit.*). The greatest number of pairs known in 1 area was at least 4 pairs with young in New Hampton in Jul 1953 (V.H. Hebert). Highest recorded elevation at this season is 1 at 2300 feet on Mt. Monadnock 29 Jul 1972 (J.H. Ward). Breeding birds typically leave nesting areas by the last 2 weeks of August. The number of birds present can vary widely from season to season; there were nearly none in 1958 or 1976, years when hairy caterpillars were very scarce. Conversely, in 1996, 2003, 2005, 2007, and especially 2004, the species was very common when caterpillars were abundant. BBS data indicate a small annual population trend decline averaging about 1% per year in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. The first southbound migrants are moving by the last week of August; V. H. Hebert reported the last residents leaving New Hampton by 22 Aug 1954. Peak migration period is typically the first 3 weeks of September as suggested by 7 records for Star Island between 1 Sep (in 1999) and 24 Sep (in 2000) (both R.W. Suomala). Birds are typically gone by early October, though stragglers are occasionally noted later, such as 1 at Walpole 27 Oct 1960 (T. Richards), 1 freshly dead at New Boston 9 Nov 2002 (B. Linscott), and 1 at Rye 1 Nov 2005 (S.R. Mirick).

In 3 seasons since 1950 there have been significant statewide fall flights which, with the exception of 1 at Errol 23 Sep 1957 (R.J. Bradley *et al.*), have produced all the late fall records for the White Mountains and northward. The first such flight was in the fall of 1954 following 1 of the largest Gypsy Moth *Lymantria dispar* infestations ever recorded the previous year and was well described by Griscom (1955). It was concentrated in the 20 Sep to 15 Oct period and included “several” at Pittsburg (F.T. Scott), 6 at Lincoln 2 Oct (G.P. Baker), and 1 at Smuttynose Island, ME, 9 Oct as reported by Libby (1955); latest was 1 at Monroe 26 Oct 1954 (R.B. Emery *et al.*). A smaller flight occurred in 1963 also following a Gypsy Moth infestation the previous year which brought single birds to Littleton 24 and 27 Sep (J.B. Grant, L.E. Cole *et al.*) and the latest at Franconia 22 Oct 1963 (S. Rowins *et al.*). The third flight in 1964 was also concentrated in the 20 Sep to 15 Oct period. Northern reports were from Jackson 21 Sep and 1 Oct (J.R. Warren), from Pittsburg 17 Oct (M. and C. Dore), and Littleton 30 Sep and 11 Nov (R.J. Bradley), the latter being the latest known fall record for the state.

Other big Gypsy Moth years (1974, 1977, 1979) apparently did not engender large numbers of cuckoos the following year. But many more birds than usual were found

in fall 2007 without a big Gypsy Moth year in 2006, this time the same year of a Gypsy Moth outbreak.

Black-billed Cuckoo *Coccyzus erythrophthalmus*

Status. Regular but uncommon spring migrant, summer resident and breeder, and fall migrant at lower elevations nearly statewide, being slightly less numerous from the White Mountains northward. Little change in status seems to have occurred since 1900.

Early reports to 1950. The first record for New Hampshire is that of Belknap (1792) who included the “Cuckow, *Cuculus americanus*?”, surely meaning this species rather than the preceding one since that species was likely not present in the state at that time. Goodhue (1877a) called it a “[v]ery common summer resident; breeds” in the Webster area. Brewster (1937) considered it a “[c]ommon summer resident” in the Lake Umbagog region, his extreme dates there being 27 May to 6 September. He noted that “one of its most favored resorts” was at Lakeside in Cambridge, New Hampshire. Brewster’s observations disagree with those of Maynard (1871) who felt that only stragglers reached north of the White Mountains, but Brewster is probably more reliable.

Dearborn (1898) called it “common” in Belknap and Merrimack Counties “from near the middle of May til about the 1st of October.” In the coastal region Dearborn (1903) also called it common, his earliest date being 13 May in both 1898 and 1899; in fall he noted that “[m]ost of them go in September, though I have seen them as late as the fifth of October.” Allen (1903) considered it a “common summer resident...penetrating the valleys and foot hills of both sides of the White Mountains, where it is found not infrequently...up to at least 1,000 feet. Mr. F. H. Allen has found it quite common at Jefferson and Randolph...”

Howe (1901–1903) called it “[n]ot common” near Newfound Lake, having only records of 1 found dead in Jul 1896, and single birds in Jul and Aug of 1900 and 1901 respectively. Thayer (1903) called it a “fairly common summer resident” near Mt. Monadnock. He recorded birds calling in flight at night as high as 3000 feet elevation. The latest recorded nesting is of a nest still containing unfledged young 14 September in 1901–1903 near Dublin (Thayer 1903). Wright (1911) considered it regular but a “rather uncommon summer resident” and breeder in the Jefferson region; he recorded 1 as high as 2000 feet elevation on what he called “Boy Mountain” 25 Jun 1905, and his latest date was 1 at Meadows 3 Oct 1900. Lord (1918) reported that the earliest arrival date in the Hanover area was 20 May and mean arrival date was 24 May in 1912–1917. Goodhue (1922) thought it a “rather common summer resident” statewide that arrives about May 10th and departs by the middle of October.”

Marble (1927) considered it a “rare [summer] resident” at lower elevations in Crawford Notch.

In the Concord region, White (1924b, 1937) considered it a regular “summer resident in variable numbers;” he states it was scarce there in 1920, 1924, 1928, and 1936 and common in many of the years in between; he found nests 7 Jun 1925 and 16 Jun 1932.

At the Isles of Shoals, Thaxter (1884) mentions that “[f]or several years one pair of cuckoos lingered through the summer...” at Appledore Island, ME, this apparently being the earliest known record for the islands. Allan (1931) mentions 1 in an unspecified state 6 Jul 1929. Wright (1937a) records that “one or two pair” nested on Appledore both in 1935 and 1936 and that on 14 Aug 1935 a bird was seen on Smuttynose Island, ME.

1950 to present. Annual numbers are variable. Breeding population has declined at least since about 1990 (Hunt 2009b).

Spring. Earliest recorded arrival is 2 at Barrington 25 Apr 2004 (M. Tarr) and mean arrival date 1952–2006 was 18 May. Earliest record for north of the White Mountains is 1 at Littleton 16 May 1964 (ASNH field trip). Most first arrivals appear in the Merrimack River valley, noticeably more often than in the Connecticut River valley or at the coast. Peak migration period is the last 3 weeks of May, exceptionally into mid-June. Latest probable spring migrant is 1 at Star Island 8 Jun 1999 (R.W. Suomala) where it does not breed.

Summer and breeding. Found widely throughout the state at least up to 2000 feet elevation south of the White Mountains and presumed to be breeding sparsely throughout this area. In the White Mountains and northward, it has been recorded from June to mid-August and is presumed to have bred in at least 15 towns, the northernmost being Pittsburg.

However, in the 1981–1986 *Atlas of Breeding Birds* it was confirmed or thought probably breeding in 35 atlas blocks (Foss 1994), only 3 of which were north of the

White Mountains. On a statewide basis, reports vary from year to year, possibly in part because of variations in observer effort. Since 1950, years in which it was little reported were 1958, 1966, 1972, and 1976; years in which it was reported more often than usual were 1960, 1964, 1971, 1977, 1980, 1981, 1991–1996, 1999, and 2005. It was noticeably less common in 1981–1986 than in the 1940s and 1950s (R. Andrews *in* Foss 1994). In Jun/Jul 1995, many more reports came from north of the White Mountains than usual. A map showing where about 30 reports of this species came from in Jun and Jul 2004 gives a generally similar distribution (NHBR 23 [2]: 20). Both general and local concentrations occasionally build up when there is an infestation of caterpillars such as in the Conway–Freedom area in 1970 and 1971. A bird thought to be “completely exhausted” seen at Star Island 25 Jul 1958 (W. Taber) could have been a postbreeding wanderer or a very early southbound migrant. BBS data show a modest annual population trend decline averaging about 3% per year in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. The first southbound migrants possibly begin to move through by the third week of August as suggested by a migrant banded at Star Island 16 Aug 2000 (R.W. Suomala *et al.*). Peak migration period is the first and second weeks of September, and all birds are usually gone by the first week of October. Peak fall count known is 6 heard flying overhead at night at Enfield 16 Aug 1998 (P.D. Hunt). Latest known records for the White Mountains and northward are 31 Aug 1971 at Pittsburg (R.S. Ridgely), 16 Sep 1965 at Littleton (H.C. McDade), and 6 Oct 1964 at Jackson (J.R. Warren). South of the White Mountains most late records are from near the coast; there are 3 late inland records: 1 at Brentwood 13 Oct 2005 (G.W. Gavutis, Jr., *et al.*), 1 at Lee 18 Oct 1966 (O. Earle *et al.*) and 2 at Brookline 19 Oct 1990 (M. Neveu). One was found at Star Island on 29 Aug 1953 (W. Taber *et al.*), 17 Sep 2000 (R.W. Suomala), and on 7 Oct 1973 (ASNH field trip).

ORDER STRIGIFORMES

FAMILY TYTONIDAE

Barn Owl *Tyto alba*

Status. Very rare at the extreme northeastern edge of its range. One breeding record and 8 other reports.

Early reports to 1950. One at Belmont 10 Aug 1948 (P. Sheppard), apparently the first published record for the state.

1950 to present. One breeding record at Hollis in Aug and Sep 1977 (W. Spaulding); a pair with 7 young in a barn silo; photograph by P. Smith (ASNH News; Dec 1977) and on 3 Sep 1977 by D. J. Abbott. Records in the Merrimack River watershed besides the nesting record at Hollis are 1 at Wolfeboro 17–18 Aug 1960 (R.P. Fox), single birds at Hancock 18 Oct 2004 and 8 Nov 2002 (both D. and L. Stokes), and the northernmost 16 Oct 1971 at Meredith (A. Lincoln). Records in the Connecticut River watershed include 1 at Windsor 2 Apr 1966 (Brady), 1 at Plainfield 20 Dec 1972 (Taylor), and 1 found recently dead at Alstead 10 Feb 1999 (H. Weeks).

All 8 accepted VT records are from the southern part of the state. One published breeding record and at least 6 other sight reports for ME are all near the coast (P.D. Vickery pers. comm.). Has increased slightly in MA since 1950, primarily in the southeastern part of the state.

FAMILY STRIGIDAE

Eastern Screech-Owl *Megascops asio*

Status. Regular but uncommon and local breeding and resident; relatively common in the southern half of the state until about 1890, then become less common, but increasing since 1980s.

Early reports to 1950. First reported by Belknap (1792) as the “Barn Owl, *Strix passerina*.” Next earliest reports are those of Coues (1868) and Maynard (1871), and from Goodhue (1877a) at Webster. Specific reports came from Grafton County (Sherman 1889), Bridgewater 28–31 Aug 1900 (Howe 1901–1903) and 4 recently fledged owls at Intervale near North Conway 18 Jun 1900 (Allen 1903). It was common earlier but became uncommon about 1900 near Webster and Concord according to Dearborn (1898) and White (1937). Both Dearborn (1903) and Scott (1921) felt it was relatively common in the Durham area in the early 1900s, but Allen (1903) considered it an uncommon permanent resident south of the White Mountains. The most northern records came from

Wright (1911) for the Jefferson region: “Mr. Spaulding found the Screech Owl quite rare and never found it nesting although it was seen on 4 May 1898.” He also mentions “the last record was of a bird that followed a dove into a cupola of a blacksmith’s shop in Lancaster 7 Feb 1907 and came down through the floor and was killed.”

The decline of the Eastern Screech-Owl in the early 1900s was also noted in the VT Atlas project (Laughlin and Kibbe 1985); it has always been considered very rare in ME (Palmer 1949). Some authors believe these declines could be linked to the disappearance of old Apple *Malus domestica* orchards, fields and small woodlots.

1950 to present. Evidence of an increase in numbers since 1980s, especially from the southern tier of counties north to the latitude of the Lakes Region. Essentially a permanent resident where it occurs.

Calling and breeding season is March through July, most frequently reported in April and May. Birds seen and heard calling and families of young have been reported with increasing frequency in the coastal region at Kingston, Exeter, and around Great Bay at Greenland, Durham, Newington, and Stratham. In the Merrimack River watershed, reports including families of young have come from Tamworth, near Campton, Hollis, near Moultonborough, Milford, Sandwich, Peterborough, Concord, and Laconia. In the Connecticut River watershed, reports have come from Walpole, Hinsdale, Winchester, and near Lyme. The *Atlas of Breeding Birds* done in 1981–1986 (T.H. Arter in Foss 1994) showed a concentration in the southeastern part of the state but also possible reports as far north as the latitude of Gorham and Jefferson, nearly as far north as the northernmost known occurrence at Lancaster. The densest part of the population is clearly in the coastal region: at least 12 birds were found including 5 in Greenland 21 Apr 2007 (R.W. Suomala *et al.*).

In July and August birds call less frequently so there are few reports; several include Somersworth 15 Jul 2003 (C. Landisheff), Gilsum 1 Aug 1993 (M. Wright), north at Jackson 11 Aug 1956 (J.R. Warren *et al.*), Dover 14 Aug 2006 (A. and S. Galt), Merrimack 20 Aug 1966 (R.W. Lawrence), 2 at Dover 26 Aug 2004 (A. Galt), Brookline 28 Aug 2006 (M. Anne), and a pair with 4 young at Concord 17 Jul 2007 (R.A. Woodward).

Representative fall reports include Gilsum 10 Sep 2002 (M. Wright), New Hampton 14–15 Sep 1968 (V.H. Hebert), Portsmouth 6 Oct 2000 (S.R. Mirick, J. Mathews), Portsmouth 20 Oct 2000 (S.R. Mirick), Bow 24 Oct 1951 (G.P. Baker), Rye 17 Nov 1985 (E.W. Phinney), Walpole 22 Nov 1956 (D.W. Brainard).

CBCs provide the most data for early winter. On the

Coastal CBC it was reported about every other year 1953–1994, then annually since 1995 with 2 seen in 2001 and 2003, and 5 in 2006, illustrating a significant increase. Inland it was first reported on the Lee CBC 18 Dec 1988. There is a reasonable number of records in January, and late seasonal records include Bedford 20 Feb 2002 (S. Saviteer *et al.*), 2 at Hinsdale 23 Feb 2008 (E.A. Master-son), and at Milford 25 Feb 2003 (J. and A. Stevens).

In summary, this species appears to have become much more common in New Hampshire during the period of deforestation from 1750–1880 after which it became less numerous as heavier forest returned 1880–1950. Since 1980 especially, as mature woodland has been reduced in the southern part of the state, this species has increased there again, notably in the southern ends of the Connecticut and Merrimack River valleys and at the coast.

Remarks. Both red and gray color morphs occur in the state, the gray morph predominating. Van Camp and Henny (1975) and Mosher and Henny (1976) both have suggested that the red color morph has a higher metabolic requirement below 23° F which may explain the shortage of red-morph birds in New Hampshire. About 1980–1982, an unusual intermediate brownish morph bird was found in Amherst (R.A. Quinn).

Great Horned Owl *Bubo virginianus*

Status. Fairly common resident whose status has shown little change in the past 200 years. It tends to nest in dense woodlands, often in Great Blue Heron colonies. Essentially a permanent resident where it occurs.

Early reports to 1950. The first report for the state of “Horned Owl, *Strix bubo*,” is that of Belknap (1792) on the authority of a Mr. Peck. Subsequent early writers found it a common resident in the north country (Brewster 1925), coastal region (Cram 1899, Dow 1893, Dearborn 1903, Scott 1921), Merrimack River drainage (Goodhue 1877a, 1922; Dearborn 1898, 1905; White 1924b, 1937), and in the Connecticut River drainage (Thayer 1912, Lanyon 1941–1944). The only areas where it appears to have been uncommon are the Jefferson region (Wright 1911) and parts of the White Mountains (Marble 1907). The early literature reports several specimens taken and nests found. Reports submitted to RNEB 1936–1949 show it widely distributed in the state to Pittsburg in the north, in the White Mountains, and throughout the state from the White Mountains southward.

Laughlin and Kibbe (1985) report that it declined in VT in the 1930s though there is no evidence of such a decline in New Hampshire. Palmer (1949) reported incursions of this species into the southern and coastal regions of ME in the winters of 1908–1909, 1917–1918, 1918–1919, 1922–1923, 1926–1927, 1927–1938; similar incursions

probably occurred occasionally in New Hampshire though data are lacking. Some of the ME incursions included more than 1 subspecies as also noted by Forbush (1927).

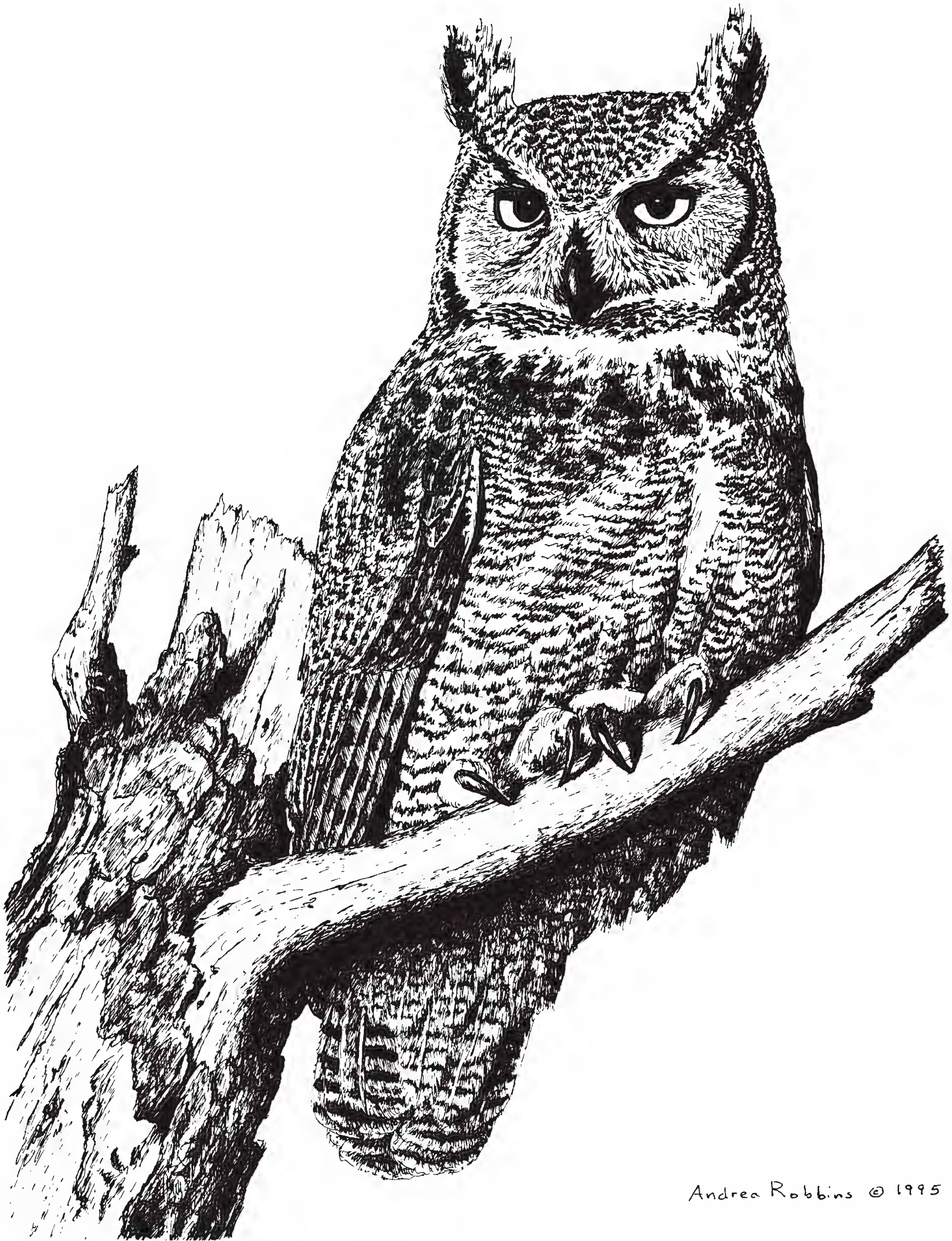
1950 to present. Continues to be a common to moderately common resident statewide, especially in the coastal plain, probably some modest population increase since its preferred habitat has increased in parts of the state due to forest succession.

Nesting season is late February to May when the largest number of reports is made. Spring records generally are from all across the state and many include accounts of courting birds, nests, and young. Nests are reported in old Great Blue Heron nests, old Red-tailed Hawk nests, and nests built by the owls, very often in Eastern White Pines *Pinus strobus*. During the *Atlas of Breeding Birds* period 1981–1986, breeding was confirmed or believed probable in 52 atlas blocks scattered widely over the state though concentrated in the southeast (Foss 1994). Nests were reported in 4 active Great Blue Heron colonies in 1998.

From June through August birds call less and often still have young with them. Some examples from across the state include 3 at Newmarket 22 Jun 2001 (S.R. Mirick), “2 nearly full grown” at East Barrington 22 Jul 1969 (H.M. Storer), 2 at Errol 18 Aug 1991 (S.B. Turner), and 2 at Canaan 31 Aug 1967 (L.G. and E.W. Phinney). BBS population trend data show a small increase averaging under 1% per year for 1966–2009 and 1999–2009 (Appendix IV).

September to November representative reports include 2 at Pittsburg 2–3 Sep 1969 (E.L. Scott), 1 at Ossipee 23 Sep to 5 Oct 1952 (E.E. Pratt), 1 at Jackson 9 Sep 1966 (J.R. Warren), 1 at Hancock 1 Oct 1967 (C.F. Walcott), 6 at East Kingston 7 Nov 1965 (D.W. Finch), and 1 at Kensington 29 Nov 1987 (G.L. Perry). From December to early February birds begin calling and mating. Early winter status is best illustrated by CBC data. There are a number of reports from northern areas like Pittsburg and Errol and elsewhere in the state, but the Coastal CBC and state totals are illustrative of status changes: only 3 statewide in 1953 increased to 10 at the coast and 10 on the Lee CBC in 1987. The highest total state CBC count was 21 in 1998. There are fluctuations in the pattern but a general increase occurred 1953–2009, both in the number of CBC counts reporting the species and the total numbers reported. Some of this increase may be a function of the increased number of CBC participants.

Taxonomic note. A male of a western race of the Great Horned Owl identified as *Bubo virginianus pallescens* was trapped in Boscawen 15 Nov 1907 and was in the collection of C. F. Goodhue. It is the only specimen of any other race known from the state besides the breeding nominate race *B. v. virginianus*. White (1926) reported



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the Boscawen bird as *pallescens* and, according to Forbush (1927), “Mr. White took the bird to Mr. James L. Peters of the Museum of Comparative Zoology at Harvard College who examined it carefully, compared it with other specimens and now makes following statement. ‘Size and coloration typical of birds of southern Alberta south to Colorado that should be called *occidentalis* (Stone), but since the American Ornithologists Union does not recognize *occidentalis*, the bird was correctly recorded as *pallescens* by Mr. White. I know of no other clearly authentic record of this race in New England.’” However, since 1927 the taxonomy of the races of this species has been changed. Peters compared the Boscawen bird to specimens from Alberta and Colorado, now considered the range of *B. v. wapacuthu* (AOU 1957), usually known as the Arctic Horned Owl, which is known to have occurred in MA (Forbush 1927, Griscom and Snyder 1955 [listed there as *subarcticus* which name was later changed to *wapacuthu* by the AOU], Veit and Petersen 1993), and in ME (Palmer 1949). Whereas *wapacuthu* is a very pale bird of boreal forest found east to Ontario and which is known occasionally to migrate south of its usual range in winter, *pallescens* is a desert form primarily found in the Pacific southwest and northwestern Mexico; it is unknown east of Texas. Therefore, the Boscawen specimen can safely be considered to be of the race *B. v. wapacuthu*. Sadly, the mounted specimen of this bird that was originally housed in the NHFG Hearing Room in the state capitol building and which was moved to the NHFG headquarters in Concord about 1980 was destroyed when that building burned down 22 Apr 1984 (Swanson 1984).

Snowy Owl *Bubo scandiacus*

Status. Irregular winter visitor recorded almost annually; during incursion years in favorable localities, usually near the coast, it occurs in modest numbers.

Early reports to 1950. The first report for the state is that of Belknap (1792), who listed “White Owl, *Strix nyctea*.” Thaxter (1870) noted it as present on the Isles of Shoals nearly every winter, and in letters published by Titus (1999) she mentions numbers at the Shoals of 20–25 at once in unspecified years prior to 1889. Other early reporters emphasize that it was only occasional away from the coast and provide few specific record dates (Goodhue 1877b; Dearborn 1898, 1905; White 1924b, 1937). Wright (1911) said, “Mr. Spaulding states that he has seen and shot Snowy Owls on a number of occasions. His latest record is a bird in his collection which was taken 1 Dec 1905.” Most reports are from 1 November to 31 March. Goodhue (1877a) reported the earliest known in fall, 1 shot in Webster by 10 Oct 1877. A most unusual summer report was of 1 living in an ice-house which was shot in Concord 15 Jul 1877 (Rundlett 1897).

Snowy Owls are most numerous during major incur-

sions. Such incursions have been reported in the northeastern United States in the following winters: 1853–1854, 1862–1863, 1866–1867, 1876–1877, 1882–1883, 1889–1890, 1892–1893, 1896–1897, 1901–1902, 1905–1906, 1917–1918, 1922–1923, 1926–1927, 1930–1931, 1937–1938, 1941–1942, 1945–1946, 1949–1950. (Gross 1927, 1931, 1947; Veit and Petersen 1993; RNEB). Though data are not available to document it, birds probably came to New Hampshire in most if not all of these incursions. Specific New Hampshire reports for these incursions include the following:

1866–1867: incursion reported at Isles of Shoals by Thaxter (1870); reported by Gross (1947).

1889–1890: 16 Snowy Owls shot at Hampton that winter; specimen is in the Jenness collection (Dow 1893); 1 was at Hampton River 13 Feb 1890 (Allen 1913).

1901–1902: several killed at Portsmouth (Allen 1903).

1905–1906: several killed at Hampton 24 Nov 1905 (Deane 1906); this may have been the winter in which Goodhue (1922) reported that a hunter had shot 30 at the coast.

1926–1927: 2363 birds recorded in New England; 8 in New Hampshire. The birds began to arrive in mid-October with the main arrival 10–16 Nov (Gross 1927). Three shot in Newmarket Nov 1926; they were very thin with empty stomachs (Phillips 1926).

1930–1931: 1214 birds reported from the northeast; 7 from New Hampshire (Gross 1931).

1941–1942: reports from 5 inland localities: 21 Oct at Concord and 29 Oct at Penacook (*fide* J. Blackstone); mid-month Nov at Franklin (K.C. Elkins), Hanover (R.L. Weaver), and Whitefield (D.J. Lennox).

1945–1946: 2043 birds reported in New England; 63 of them in New Hampshire (Gross 1947).

1949–1950: 3 at Hampton 15 Jan 1950 (A. Argue), 1 at Plainfield 10 Feb 1950 (*fide* D.E. Wade), 1 at Hampton 11 Mar 1950 (C. deWindt *et al.*).

1950 to present. Reported almost annually but incursion numbers have been much smaller than before 1950.

This species is reported primarily between November and March. Elevation record for the state is 1 at 5500 feet on Mt. Washington 5 Nov 2008 (S. Welsh). Late spring dates in non-incursion years include Manchester 2 Apr 1957 (photo in newspaper), Hampton 4 Apr 1972 (M. Kendrick), Gilford 3 May 1971 (H. Storer), Rye 4 May 1993 (J. O’Brien), Bristol 11 May 1993 (C. Parker *et al.*), Shelburne 6–15 Jun 1967 (P. Dougherty), and Plymouth 8 Jul 1990 (S.A. and W.W. Fogleman; possibly the bird that lingered into summer at Logan Airport, Boston). Latest known spring record for the Isles of Shoals is 1 in early Apr 2006 (E. Perkins). A straggler captured at the Isles of Shoals tern colony 25 Jun 2009 was released later

that day at Stratford where it was still present 9 Jul 2009 (S. Stoddard).

In general, most reports have been within 20 miles of the coast; about a quarter of the state reports most years are from inland communities with few from north of the White Mountains. Regular at the Isles of Shoals. Small invasions several times since 1950:

1960–1961: incursion first noted at Hampton 21 Nov 1960 (Scribner *et al.*); 3–4 on the coast and 3 in Dover.

1964–1965: 4+ birds on the coast and inland reports from Goffstown, Farmington, Laconia, and Nashua.

1967–1968: several birds along the coast and inland records from Whitefield, Concord, Bethlehem, and Columbia; latest at Newington 26 Mar to 29 Apr 1968 (L.G. Phinney).

1971–1972: several reports from the coast including a late report from Hampton on 4 Apr 1972 (M. Kendrick).

1983–1984: at least 3 and possibly 5 in Concord starting 19 Dec; single birds on CBCs in Nashua, the coast and 2 on Star Island; 1 at Alstead Center 31 Jan.

1991–1992: first noted on 29 Oct 1991 at Greenfield (G.P. Baker) and at Hancock (H.M. Cadot), with 11 reports mainly inland in Nov–Dec; at least 8 on the Coastal CBC and several in spring to 9 Apr 1992 at Laconia (S. McGarry).

2001–2002: flight first noted at Manchester 31 Oct 2001 (phone report); 5 other fall sightings; at least 4 more birds frequently reported in winter plus 6 birds on the Isles of Shoals CBC; ending with 1 at Hampton 9 Feb 2002 (A. and B. Delorey).

2008–2009: first reported at Rye 2 Nov (S.R. and J. Mirick), at least 15 other reports; last at Rye 22 Apr 2009 (R. Liab).

Remarks. A few birds' movements have been studied. One banded in New Hampshire was recovered in Quebec. One bird found in Pelham 13 Apr 1997 had been marked and released in Duxbury, MA, several weeks earlier. A bird reported at Rye 29 Dec 1992 (J. Lyons) was marked at Logan Airport, Boston, MA. Smith (2002) reports on migration in this species using satellite telemetry techniques: (1) in spring 2001 1 bird left Logan Airport, MA, and passed over Waterville Valley, New Hampshire, before crossing to ME and then to Labrador City, Quebec; (2) 1 at Logan Airport 8 Apr 2001 was tracked over New Hampshire and VT: in mid-May it moved to parts of Baffin Island just north of Prince Charles Sound; (3) 1 left Logan 8 Apr 2001, moved through eastern New Hampshire and ME and finally reached Newfoundland; (4) a bird left Duxbury Beach, MA, moved along coastal New Hampshire and ME and eventually reached southern Baffin Island. Smith's interesting conclusion is that

"We were also surprised to find that not all birds were in the Arctic Circle by early June."

Northern Hawk Owl *Surnia ulula*

Status. Rare and irregular fall and winter visitor; most records are from the northern part of the state.

Early reports to 1950. The first known state record was 1 shot at Webster in Jan 1873 by Goodhue (1877a, 1922) who also saw a second bird there in 1877. Next report was 1 seen in Colebrook on 20 Apr 1884 (Norton 1884a), a precursor to the big incursion in the winter of 1884–1885 described by Brewster (1885). Other New Hampshire reports from that big flight are 1 shot at Lancaster by F. B. Spaulding 19 Nov 1884 (Wright 1911), 1 shot by L. J. Rundlett near Penacook 17 Nov 1884 (White 1924b), and 1 collected at Washington in 1885 by H. V. Reed (MCZ #291316). Norton (1884b) wrote on 1 Dec 1884 that at Colebrook "Hawk Owls came three weeks ago in greater numbers than ever known before. Farmer's sons have been killing them all over the country." Perhaps in the same era belongs the bird shot by O. H. Phillips near Nashua (Allen 1903). All of Brewster's Lake Umbagog 1884 specimens were taken in ME. Dearborn's (1898) report of 1 shot "in the breeding season" at Sanbornton (*fide* G. Stolworthy) seems remarkable if true.

Another flight occurred in 1889–1890 and Brewster (1925) collected birds in New Hampshire at Lake Umbagog on 12, 19, and 24 Oct 1889; 1 was shot in Penacook 21 Dec 1889 (Goodhue 1922, White 1937); and 1 seen in Grafton County 12 Oct 1889 (Sherman 1889). One was seen as close as 8 feet in Exeter on 25 Dec 1902 (Selleck and Cram 1903); 2 were shot near Milford and another 2 near Portsmouth about this time (Allen 1903). One was near Dublin in late Nov 1905 (Thayer 1912), 1 was at Salisbury 5 Nov 1906 (*fide* S.A. Shaw), and 1 was seen at West Concord (F.B. Farnum) in Feb 1914 (Goodhue 1922). Lord (1918) reports 1 taken at Hanover on an unnamed date in 1912–1917. A specimen was taken near the foot of Mt. Chocorua on 6 Nov 1926 by C. Hammond (MCZ #291318), 1 was at Bath 4 Mar 1942 (W.P. Smith), and 1 was collected at New Hampton 6 Nov 1943 and sent to the Rhode Island College of Education. One was seen at Kingston 27 Feb 1948 (T. Barret), and a bird was shot in Chester 4 Nov 1945 (RNEB).

1950 to present. At least 16 birds were reported 1950–2009. There were no major incursions that reached New Hampshire in this period. Extreme dates range from 20 November to 25 March. Reports are: Pittsburg 20 Nov 1958 (*fide* V.H. Hebert), Laconia 21 Dec 1961 to 26 Jan 1962 (H.C. Anderson), Laconia 20 Dec 1964 (J.P. Merrill), Northumberland 1 shot 17 Dec 1965 (G. Waterhouse), Littleton 28 Dec 1965 (H.C. McDade), Lancaster Dec 1965 to Feb 1966 collected by G. Waterhouse (UNH

#4117-A), Littleton 5 Jan to 24 Mar 1969 (McIlwaine 1971) seen by many and photographed, Gilford 28 Jan to 25 Mar 1973 (V.H. Hebert), at least 2 in Coos County in Dec 1973 (C. Carlson; photo), Temple 26 Jan 1974 (R. Pratt *fide* W.S. Lord), Newmarket 1 Mar 1978 (L. Sewall), Stewartstown 9 Nov 1991 (D. Blais), Jefferson Meadows 1 Dec 2000 (C. Bretton, F. Sladen), Whitefield airport 2 Dec 2000 to 19 Feb 2001 (C. Bretton, D. Govatski *et al.*, photo NHBR 19 [4]: 25), 1 on the Exeter CBC 25 Dec 2002, Tamworth 29–30 Dec 2002 (R.S. Ridgely *et mult.*; photo), 1 at Meredith 5 Dec 2008 (K. McClendon), and Center Harbor 12 Jan to 13 Mar 2009 (J.P. Merrill, L. Tanino *et al.*). See Bannon *et al.* (2001) and Leukering (2001) for mention of the 2000–2001 invasion that reached Ontario, Quebec, and Minnesota primarily; there were only the 2 reports mentioned above for New Hampshire that winter. See Fox (2008) for review and discussion of all known New Hampshire reports.

Burrowing Owl *Athene cunicularia*

Status. Vagrant; 1 lost specimen and 1 sight record.

Early reports to 1950. One bird was reported by White (1926) and Forbush (1927). The latter author says that in “Dover about 20 February 1922 1 was found dead in a barn by Patrick Carroll, and preserved in the collection of George F. Wentworth who identified it. The bird apparently died of starvation and was found soon after death.” Forbush wondered “whether the three specimens taken in New York and New England had not escaped from captivity. There is no evidence, however, that they were ever caged.” The specimen is now lost.

1950 to present and Taxonomic note. One seen at Star Island 14 May 1978 (D.J. Abbott *et al.*). In MA in 1964–1986 there were 7 accepted sight records of which 6 were found on the coast and 1 was inland; 6 were first seen between 13 May and 17 July while the seventh appeared in February. One record from MA was determined to be of the migratory form *hypugaca* from the west rather than *A. c. floridana* from Florida. Most birds found in the Northeast have either proved to be *A. c. hypugaca* or have remained subspecifically unidentified (Veit and Petersen 1993). The first record from ME was inland in Aug 2006 and was thought to be of the form *hypugaca* (ME-BRC website, P.D. Vickery pers. comm.).

Barred Owl *Strix varia*

Status. The most common and widespread owl in New Hampshire which appears to have been so for the last 200 years, primarily a year-round resident and preferring heavily-wooded swamps, hemlock, or pine forests with adjacent open areas for hunting; found up to 2500–3000 feet elevation (Bent 1938).

Early reports to 1950. The “Speckled Owl, *Strix aluco*.” of Belknap (1792) surely belongs here. In the 1800s and early 1900s, it was considered the most common and widespread resident owl in the state (Goodhue 1877a, 1922; Dearborn 1898, 1903, 1905; White 1924b, 1937; Brewster 1925; Allen 1903). The first documented breeding record was on 1 Jun 1888, when a nest was found at Mt. Chocorua and 2 young were taken (Bolles 1890). Also it was reported near Echo Lake on 26 Jun 1890 (Bates 1891); Dow (1893) states that a specimen was taken at Hampton 1889–1890 which was then in the Jenness collection. It was also mentioned by Rogers (1902–1919) during Aug and Sep 1914 from the Connecticut Lakes Region. In contrast, in the Jefferson region Wright (1911) and near Dublin Thayer (1912) both stated that it was considered an uncommon resident.

Nineteen reports were submitted to RNEB 1936–1949 from all over the state and in every month of the year. There is some evidence of migratory activity in fall and early winter in some years by birds moving southward which would account for a few writers noting that it became more noticeable in fall (Dearborn 1903, Allen 1903, Brewster 1925). Such seasonal flights if not incursions have also been noted for this species in ME (Palmer 1949).

1950 to present. Still considered the commonest owl in the state, and its population may now be larger than in both 1900 and 1950 as reforestation has occurred widely since then. ASNH received 321 reports of this species in 1951–1980 from all over the state and in all seasons. From 22 Dec 1961 to 17 Jan 1962 many birds were seen statewide by day, suggesting a possible incursion from the north, poor hunting conditions, or owls in poor condition; reports came from at least 18 inland communities with 7 birds being seen on the Laconia CBC. An “invasion” was noted in the Connecticut River valley in MA in Dec 1961 (Veit and Petersen 1993). The *Atlas of Breeding Birds* project 1981–1986 found it in 52% of priority blocks plus many other locations, making it the commonest owl in the state (K.C. Elkins *in* Foss 1994). BBS population trend data show an increase averaging less than 1% per year in 1966–2009 and 1999–2009 (Appendix IV).

In the 2007–2008 winter, an incursion began appearing in Nov and continued into February. Most were juveniles suspected to have come from eastern Canada where there was a crash in the populations of small mammals that season. Rehabilitators in New Hampshire and York, ME, took in 66 birds, and 49 were reported to NHBR, primarily from south of the White Mountains but including Jefferson and Monroe. A bird probably returning northward from this incursion was a surprise at White and Seavey Islands 10 May 2008 (D. Hayward), the only known report for the New Hampshire Isles of Shoals.



Great Gray Owl *Strix nebulosa*

Status. A very rare winter visitor, possibly slightly more numerous in the 19th century during incursions.

Early reports to 1950. General reports considered it “a rare winter visitor” (Allen 1909), and as “a very rare winter visitant” (Batchelder 1901). Early records are of a bird shot on Mt. Monadnock about 1885 (Thayer 1912), a bird taken in New Boston about 1895 and in the collection of Charles I. Richardson of Manchester (Batchelder 1901, Goodhue 1922), 1 seen in Grafton County (Sherman 1889), and 1 in Wentworth’s Location in late Sep 1892 (Lowe *fide* Allen 1903). One was at Manchester in Mar 1904 and 1 was taken at Webster by W. Berwick 15 Nov 1922 (Goodhue 1922). Lord (1918) reports 1 collected at Hanover in 1912–1917 without providing a date.

Both Forbush (1927) and Palmer (1949) report incursions in 1842–1843 and 1890–1891, neither of which was documented in New Hampshire, with minor flights or stragglers noted at other times. Forbush (1927) observed that “for some reason the published records of this species in New England are not very many but I have seen in various collections a number of specimens without definitive data which were taken in this region.” There were no reports to RNEB 1936–1949.

1950 to present. The first report since 1922 appears to be 1 at Franconia 8 Feb 1969 (W. Drury). There was a small flight in the winter of 1970–1971: a letter from E. L. Chalif dated 3 Aug 1971 (*in litt.* to A.R. Keith) reports a bird clearly heard in Eaton 1 Oct 1970, and 1 was found dead in Franconia 3 Mar 1971 (H.R. Siegler, T. Richards) which was kept by the NHFG (photo in ASNH News Vol. 5, No. 9, May–June 1971).

The first major incursion of the 1900s occurred in 1978–1979. Reports included Hancock 16 Jan 1979 and 10 Mar 1979 (both C.F. Walcott), Stratham 18–31 Jan 1979 (*fide* E.W. Phinney), Bristol 22 Jan 1979 (V.S. Wright), Hampton 25–28 Jan 1979 (*fide* A.C. Borrer), 2 separate birds at Rye Mar 2–3 1979 (A.C. Borrer, D.J. Abbott), 2 in Portsmouth 4 Mar 1979 (E.K.D. Lewis), and Hancock 10 Mar 1979 (*fide* H.M. Cadot). One report in the winter of 1980 at West Hopkinton 12 Jan (E. Hager). A second incursion came in the winter of 1984 when 5 owls were reported: Hillsborough 6 Jan (H. Baldwin), Concord 29 Apr (J. Adams), Rochester 7 Jan (S.B. Turner), Campton 26 Jan (S.A. and W.W. Fogleman), and Monroe 29 Jan (R.J. Bradley).

Two records based on telephone reports in the winter of 1985–1986: Rollinsford 23–25 Dec 1985 (J. Argue) and Concord 3 Jan 1986 (H. Siff). One at Canterbury 21 Dec 1990 (M. and O. Fifield). Four reports in the winter of 1996 include Sanbornton 12 Jan (M. and V. Collard), Dover 13 Jan (J. Denik), 1 in Rochester 28 Feb (L. Driscoll

et al.; photo), and probably the same bird still there as late as 1 Mar (S. Drew, G. Mitchell). More recent reports in 2005–2006 include 1 at Lyman 22 Jan 2006 (M. Proctor, L. Kraft *et al.*), 1 at Campton 3 Feb 2008 (W. and L. Sherman), and 1 at Durham 4–9 Apr 2009 (T. Bronson *et mult.*). Also see Fox (2007) for a review and discussion of known New Hampshire records including those listed here up to 2006.

Long-eared Owl *Asio otus*

Status. Rare resident, possibly slightly more common than the records indicate; more frequently reported in spring when breeding or migrating north or in fall or winter when migrating south, especially near the coast. It is unclear whether it was more common in the 1800s than recently and has since declined.

Early reports to 1950. Records for this species have always been sparse and conflicting and probably do not reflect its true abundance. W. Brewster collected 1 at Melvin Village 27 Dec 1876 (MCZ #201557). Considered common to abundant by Coues (1868) and Maynard (1871), and Dearborn (1903) considered it “rather common” and probably a permanent resident at the coast, possibly due to observation of winter roosts. Goodhue (1877a) thought it uncommon except as a migrant; he saw 1 once in June, but Dearborn (1898) had no reports at all from Belknap and Merrimack Counties. Brewster (1925) had only 1 report at Lake Umbagog 11 Jun 1879 in 38 years of field work there 1871–1909, precisely the area where Forbush (1927) thought it probably was rather common.

Other early reports considered it rare. Allen (1903) and Hoffmann (1904) only had a few reports from the central and southern parts of the state, White (1924b, 1937) had only 1 record from Penacook, and Goodhue (1922) said it was “more often seen in April and October than any other time,” suggesting he was seeing migrants. Wright (1911) had only 2 reports, 1 found floating in Cherry Pond 8 Aug 1907 and a nest with 5 young found by F. B. Spaulding in the Jefferson region 25 May 1905. One was shot on the banks of the Androscoggin River 12 Oct 1908 (Deane 1909), Thayer (1912) thought it rare but occasional in winter, Lord (1918) reported 1 seen at Hanover 1912–1917 but supplied no date, and Shelley (1935b) reported a pair calling in mid-August at Washington.

Reports submitted to RNEB in 1936–1949 were 1 at Hanover 29 Nov 1939 (Ballard), 1 at Moultonborough 19 Aug 1940 (S. Robbins), 1 at Eaton 28–29 May 1949 (R.P. Fox), and 1 at Randolph 8 Oct 1949 (J. Maddock). Palmer (1949) reported incursions into northern New England in 1883–1884, 1902–1903, and most notably in 1922–1923, none of which were documented in New Hampshire.

1950 to the present. Very few reports since 1980, a period

during which the number of observers increased greatly. There were 4 records in the 1950s, 10 in the 1960s, 8 in the 1970s, none in the 1980s, 10 in the 1990s, and 4 since 2000.

Spring. Reports include a photo at Keene 25 Feb 1993 (L. Rowe), a road-killed bird in Deerfield 14 Mar 2007 (J.J. Kanter *et al.*), a “bird calling and being chased by crows” at Gilford 14 Mar 1971 (V.H. Hebert), at Rye 20 Mar 1953 (C. deWindt); at Hancock 15 Apr 2009 (D. and L. Stokes), at Manchester 24 Apr 1993 (R.W. Lawrence), at Hanover 4 May 1958 (H.C. McDade *et al.*), “both heard one barking call, the other hooting” New Hampton 6 May 1968 (V.H. Hebert), “calling but call not familiar to any of the observers” Durham 16–23 May 1971 (A.C. Borrer, L.G. Phinney, E.W. Phinney, R.W. Smart), Pondicherry Wildlife Sanctuary 24 May 2006 (B. Griffith, M.G. Harvey), “seen on nest” at Kensington 28 May 1972 (V.H. Hebert), 1 at Dixville Notch 12 Jun 1972 (J. Hebert), and 1 heard calling at Stewartstown 25 Jun 1985 (G.C. and A.E. Robbins). Only a single possible report was obtained during the 1981–1986 *Atlas of Breeding Birds* project (Foss 1994). No nests have been reported since 1985.

Summer. Few reports: 3 at Dixville Notch 12 Jun 1972 (V.H. Hebert), 1 at Hampton 8 Jun 1961 (R.W. Smart), and 1 at Errol 25–26 Jun 1961 (ASNH field trip).

Fall. Scattered reports in September and November when some migration south may take place. Records include “one seen and found dead two days later” at Rumney 10 Sept 1972 (G.M. Kent); “roosting in sumac” on Star Island 20 Sept 1992 (J.C. McIlwaine), the only known record for the Isles of Shoals; at Hillsborough 8 Oct 1994 (J. Himmelman); at Errol 13 Oct 1963 (A.R. Keith); 1 in Newington in early Nov 1995 (A. Meader); at Hanover 30 Oct 1957 (H.C. McDade); at Concord 23 Nov 1997 (E. Shear *et al.*); and at New Hampton 27 Nov 1961 (Wolfe).

Winter. Reports include Newington 7 Dec 1968 (L.G. and E.W. Phinney), Rollinsford 12 Dec 1979 (*fide* R.A. Quinn), Hampton 31 Dec 1961 (T. Richards), and a few in January such as 1 at Goffstown 5 Jan 1994 (J. Wilson *et al.*), “found dead at feeder” North Hampton 13 Jan 1962 (W.P. Smith), 2 in Durham 14 Jan 1962 (A.C. Borrer), and 1 in Keene 25 Feb 1993 (L. Rowe, M. Green; photo). Recorded on CBCs at the coast in 1955, 1977, 1996, 1997, and 2008; at Errol in 1968; and in Sandwich in 2002. The only known winter roost observation was 3 together in the Lee/Durham area 28 Dec 1996 (D.J. Abbott, D.W. Finch).

Short-eared Owl *Asio flammeus*

Status. An uncommon spring and fall migrant and occasional winter visitor near the coast. It may have been a rare breeding species in the 1800s when grasslands were

more common but no records substantiate this. Has declined since 1900.

Early reports to 1950. Though it certainly occurred annually both inland and at the coast, there are very few records. Coues (1868) assumed it was common, but Goodhue (1877a) reported only 1 seen near Webster. Brewster (1925) called it a “not uncommon transient” at Lake Umbagog where he had New Hampshire records 23 Sep 1989, 8 Oct 1893, 22 Sep 1895, and 6 Sep 1897. In the Merrimack River valley, Dearborn (1898) had no records for Belknap and Merrimack Counties, yet Allen (1903) reported that about 20 (!) had been brought to a taxidermist in Milford “in recent years” just a bit farther south in the Merrimack River watershed, probably mostly migrants. White (1924b, 1937) had only 2 reports for the Concord area, 1 collected by L. J. Rundlett in late autumn and another taken by F. B. Farnum, both on unnamed dates. Goodhue (1922) thought it a “rare fall migrant” in central New Hampshire in the “last of September and October;” his only summer record was 1 shot at Webster 14 Jul 1906. One was at Penacook 30 Sep 1940 (J. Blackstone).

In the Connecticut River valley, Sherman (1889) reported a bird seen in Grafton County; Wright (1911) thought it a rare fall migrant, 1 having been shot near Lancaster in 1895 (F.B. Spaulding); and Danforth (1924) reports a bird in Jaffrey 1 May 1916. Thayer (1912) had no records for the Dublin area. One was found at Etna 22 Jan 1940 (R.L. Weaver). In the coastal region, Dearborn (1903) considered it “more common” at the coast than in the inland valleys, the only early mention of its status at the coast. One was found dead at Seabrook 5 Jan 1944 (T.F. Capeles).

In summary, we think Brewster (1925) was correct that it was a regular and moderately common transient (especially in fall), both in the interior river valleys and probably at the coast around 1900, mostly being overlooked. There is little evidence that it wintered often and none, despite a July record, of any breeding. The very small number of reports in 1900–1950 hints at a possible decline at a time when the number of observers was rising and the available acreage of grassland and pasture habitat in the state was declining.

1950 to present. Now considered a very uncommon spring and fall migrant, more often found at the coast than inland, and an occasional winter visitor near the coast in small numbers.

It was reported nearly annually 1951–1981. Of the 57 birds reported over 30 years, 6 were inland records in fall and winter while 50 were from the coastal region. Of the coastal reports, 7 were during the fall from mid-September through November, 33 in the winter from 1 December through February, and 11 were in spring from 1 Mar

to 2 May 1976 (G.C. Robbins *et al.*). Inland records were 1 at Pittsburg 3–4 Sep 1969 (F.T. Scott), a bird shot in Concord 31 Jan 1965 (*fide* V.H. Hebert), Bristol 18 Dec 1965 (R.W. Smart), Laconia 23 Nov 1968 (H.C. Anderson), and East Concord 31 October to 11 Nov 1971 (V. and B. Hayden).

Since 1981 it has been recorded about once a year, at about half the rate of 1951–1981. There have been 28 reports in the 28 years 1981–2009 between extreme dates of 12 Oct 1999 at Hampton (S.R. Mirick) and 30 Apr 1998 at Rye (D.J. Abbott), all but 6 of which were at the coast. Interior records were at Manchester 14 Nov 1990 (R.W. Lawrence), Chester 21 Nov 1998 (A. and B. Delorey), Laconia 21 Jan 1999 (A. McIntyre), Weare 21 Nov 1999 (R., F. and L. Reeve), 2 at Swanzey 19 Apr 2007, and 1 at Keene 12 Mar 2009 (both L. Tanino). The only winter seasons in which more than 3 birds were found were 1998–1999 (4) and 1999–2000 (5). Six records in November and 5 in April probably reflect migration periods.

Veit and Petersen (1993) mention major flights in MA in the winters of 1961–1962, 1978–1979, and 1981–1982. These flights were also reflected slightly in New Hampshire. In the winter of 1961–1962: 1 bird in Durham 15 Jan 1962 (A.C. Borrer), a bird flying south over Hanover 1 Apr 1962 (W. Strickland *et al.*), and a bird in Seabrook 22 Apr 1962 (R.W. Smart, V.H. Hebert). In the 1978–1979 winter: at Rye and elsewhere on the coast in Dec, a high count of 4 was on CBC reports, and birds were reported in Seabrook from Jan to 3 Mar.

Boreal Owl *Aegolius funereus*

Status. Very rare and irregular winter visitor that tends to arrive during incursions. First and only known breeding record established in summer 2001.

Early reports to 1950. Palmer (1949) reports 3 winter incursions in ME of this species: 1883–1884, 1902–1903, and 1922–1923. In New Hampshire the only evidence of the 1883–1884 flight is tentative at best and is based solely on the comment by Allen (1903) that a taxidermist in Milford had mounted “two or three killed in the vicinity during the last twenty-five years.” There are no definitive New Hampshire records from that early incursion. An adult female was collected far south in Hollis 15 Dec 1879 by J. Dwight (AMNH #360987; Fox 1883). Another was shot in Bedford or Goffstown by G. W. Boynton in Nov or Dec 1881 and is now in the mounted collection at St. Anselm’s College, Manchester. Goodhue (1922) reports 1 collected at Boscawen in Dec 1888 and a sight record by him at Webster later the same winter. R. Brewster took a bird in Cornish in fall or early winter 1890 (Howe 1902–1903), Allen (1903) reports 1 taken at Chocorua 1 Mar 1900 (H.C. Sargent), and 1 was collected at Exeter by an unknown collector 18 Dec 1890 (MCZ #317848).

Goodhue (1922) reports 1 collected at Hopkinton (F.B. Farnum) about this same time, and provides the only New Hampshire evidence of the 1902–1903 incursion, 1 collected at Concord 20 Feb 1903. Dearborn (1903) notes 1 collected at Dover sometime before the time of writing.

The 1922–1923 flight brought many birds to New Hampshire. Goodhue (1922) records 1 shot in Webster 20 Nov 1922, a “fine female” taken in Salisbury 9 Jan 1923, 1 caught alive in Salisbury 23 Feb 1923 (A. McAlister), 1 seen in Boscawen (W.G. Goodhue) about the same time, 1 picked up in the street in Concord Jan 1923 and another found in Concord 11 Feb 1923. W. E. Cram found 1 near his home in Hampton Falls in Mar 1923. Forbush (1927) records that a taxidermist in East Jaffrey had received 26 birds by 13 Mar 1923 from both southern New Hampshire and adjacent northern MA.

One was found at Canaan 19 Feb 1940 (A. McAlister, R. Ricard), and an adult was seen at close range at Dolly Copp Campground, Martin’s Location, in the White Mountain National Forest 14 Sep 1948 (R.P. Fox, F. Harris).

1950 to present. Remains a very rare and irregular winter visitor. Breeding confirmed in the White Mountains.

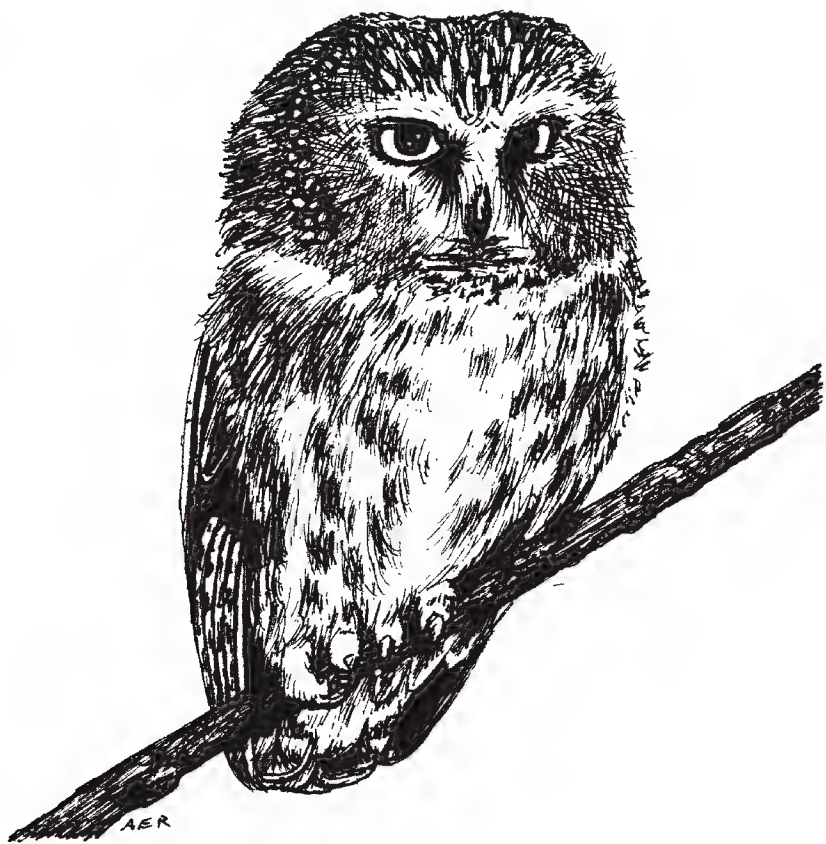
Seven sight or photo reports and 1 specimen report are known in the November to March period from 1950 to 2007: Antrim 23 Mar 1955 (E. McCabe), 1 “found dead” at Barnstead 5 Feb 1962 (P. Merrill *et al.*), 1 at Nelson 8 Mar 1962 (S. Partridge), “excellent pictures” taken at Peterborough 15 Dec 1963 (G. Walcott), 1 “found dead” in Durham 30 Jan 1970 (J. Hatch; now specimen UNH #4171-A), 1 in Monroe 16 Jan 1979 (P.A. Phipps *et al.*), feathers found at Rye 24 Nov 1996 (R.W. Suomala), and the 2001 and 2002 reports below.

In fall 2000 there was a major incursion of this species in Quebec (Bannon *et al.* 2001 and Leukering 2001). The first breeding record from New Hampshire and the eastern United States was discovered in 2001, perhaps by birds that came in that incursion. An adult was found at 4100 feet elevation on Mt. Monroe, White Mountains, 29 Jul 2001 (R. Sawyer *et al.*). S.R. Mirick visited the site 4 Aug 2001 and was able to take a video of a juvenile bird (Mirick 2002). Subsequently other observers found 2 juveniles and an adult in the same area; birds were last seen 23 October 2001. An adult Boreal Owl was netted in the Green Mountains, VT, in 2001, possibly brought by the same incursion, but nesting could not be confirmed. It is also possible that this is a very rare nesting species in the White Mountain National Forest as suggested by the 1948 report above, a more recent sighting and photograph on Mt. Parker in Bartlett 29 May 2002 (R. Horak, J. Coughlin), and by 3 recent reports in Beans Grant on Mt. Pierce: 29 Jul 2001 (R. and N. Sawyer), 4 Aug 2001 (S.R. Mirick), and 23 Oct 2001 (W. and S. McCumber).

Northern Saw-whet Owl *Aegolius acadicus*

Status. Widespread and moderately common, the next commonest owl in the state after Great Horned and Barred and probably more numerous than usually realized. It is a breeding resident but also subject to some seasonal migratory movement and occasional incursions from the north.

Early reports to 1950. Considered “common” by both Coues (1868) and Maynard (1871). Allen (1903) reports 1 at Hollis in Jun 1875 (W.H. Fox) where it was apparently “rather common” there in fall. J. Dwight collected a juvenile at Sanbornton 30 Jun 1877 (AMNH #361010). Goodhue (1877a) thought it uncommon at Webster though regular there in winter. Brewster (1925) thought it a “common permanent resident” at Lake Umbagog where he found it several times from May to November in 1890–1896; he was among the first to suggest that some of the local population might migrate farther south



in winter. Dearborn (1898) considered it moderately common in Belknap and Merrimack Counties and equal in abundance to Barred Owl there. One was seen in late Jun 1888 (F.H. Allen) at Campton, and it was heard at 4400 feet elevation (V.D. Lowe) on Mt. Adams, White Mountains, just below treeline (Allen 1903). Bolles (1890) reported 1 at Chocorua about 18 Jul 1889. A bird was heard at night near Franconia 27–28 Jun 1890 (Bates 1891). At Concord, White (1924b, 1937) called it “uncommon” but occasional in fall and winter; he had specific reports for 15 Feb 1911 (F.M. Abbott) and 27 Jan 1935 (G.B. Andrews). A bird was heard in Manchester 14 Jun 1921 (Hopkins) and “a fully fledged young bird” was at Webster 20 May 1922 (Goodhue 1922).

In the coastal region, Dearborn (1903) had 1 report from

Durham about 25 Mar 1899 (J. Drew) and said it was most often seen in winter. One was seen at Hampton Falls 6 Jan 1899 (Cram 1899) where it was thought to be resident year-round (Allen 1903); another was photographed about 1892 in Hampton (Dow 1893). Scott (1921) considered it second in numbers to Great Horned Owl in the Durham area. In the Connecticut River valley in the Jefferson region Wright (1911) thought it an uncommon resident and stated that it had been seen or heard “nearly every year for the past twenty-five” (F.B. Spaulding); he also reported 10 nesting records between 21 April and 24 May in 1893–1908. Lord (1918) reported 1 taken at Hanover 1912–1917 without providing a date.

Twenty-two reports were submitted to RNEB in 1936–1949. The first 7 of these are related to a major influx from October 1939 to Mar 1940 which apparently only reached as far south as Hanover and Ossipee. From 1943 to 1949, 1 or more birds were reported almost annually, usually no farther south than the Lakes Region but twice near the coast.

In summary, this species appears to have been more abundant in the 1800s than since and was reported more often from late spring to late summer, especially as a breeding species. Prior to 1950, systematic surveys were lacking for any part of the state.

1950 to present. Continues widespread as a breeder and is a regular spring and fall migrant.

Most vocal March through June, and breeding season is April through June. Migrants occur late March through April (Gentes 2002) and there are many reports of birds calling and stopping for a short time period. Some examples include Monroe 2–11 Mar 1971 (L.E. Cole); “at feeder” in Littleton 10 Mar 1972 (S. Colby); 12 reports in spring 1986, all but 1 in March, “an unusually high number” (R.A. Quinn); Errol 28 Apr 1993 (R.W. Suomala); 3 at Greenfield 27 Mar 1993 (D. Frechette); “visiting nest box where it eventually nested” at Bow 17 Mar 2002 (L. Denoncourt); 4–5 calling at Errol 1 Apr 1999 (R.A. Quinn); 1 at Hinsdale 24 Mar 2007 (E.A. Masterson); 2 at Concord 24–26 May 2007 (R.A. Quinn *et al.*); 2 at Hillsborough 14 May 1996 (D. and A. Strong); 1 at Weare 24 May 1996 (P.D. Hunt *et al.*); 1 at Gilsum 25 Jun 1999 (M. Wright), and 1–2 birds calling Hancock 2–20 Jun 1980 (W.P. Hill). One at Sandwich 28 Mar 2009 (A.J. Vazzano), single birds in May 2009 from Dublin, 2 at Jefferson and Hopkinton.

From June to September there are fewer reports, usually of heard birds. However 2 recently fledged juveniles were at Bow 14 Jun 2002 (L. Denoncourt) and photos were taken of 3 young fledged in a nest box in Jefferson Notch in 2002 (NHBR 21 [2]: 17). Breeding evidence includes reports such as “seen regularly at nest box” in Goffstown 18 Apr to early May 1998 (T. Reinhardt) and 1 using a

nest box relatively far south at Litchfield 18 May 2001 (M. and S. Pitcher) and at Walpole 30 Jun 2001 (H. Beck). One late report was “a juvenile picked up alive but died later” at Andover 10 Sep 1973 (Currier). The 1981–1986 *Atlas of Breeding Birds* project (Foss 1994) placed “special effort” on this species beginning in 1983, and it was recorded in 28 of 178 priority blocks, mainly in the Saco River watershed and in the New London/Andover area where 12 records were concentrated. However, these concentrations are believed to have reflected the higher degree of effort by researchers in those areas rather than any change in the populations there. If so, the species may be more common than believed in appropriate habitat statewide (R.C. Vernon *in* Foss 1994). Believed to be moderately common in much of Coos County, despite few reports. Unusual summer records at Kensington 28 Jul 1995 (S. Mitchell) and Exeter 10 Aug 2002 (G. Prazar). Most unusual is 1 found at Star Island in the Isles of Shoals 26 Jul 1958 that was released on the mainland a few days later (Taber 1959). Also exceptional was 1 that came aboard a fishing boat in New Hampshire waters 32 miles off the coast 10 Aug 2008, was brought to shore, fed, and released in York, ME.

There is usually some southbound migration in fall, perhaps some from north of the New Hampshire boundary, while other birds appear to stay as residents throughout the state. During a major flight in fall of 1999, many were banded in migration in MA but especially at Freeport, ME, where over 200 had been banded by mid-October (NHBR 18 [3]: 22); 1 banded at Star Island 26 Sept 1999 (R.W. Suomala), the second ever recorded at the New Hampshire Isles of Shoals and a very early migrant so far south, was the only evidence of this flight in the state. Early possible migrants include 1 at Newbury 28 Aug 1996 (P. Newbern) and at Exeter 13 Sept 1997 (G.

Prazar). Probable migrants were 1 at Littleton 12 Oct 1971 (H.C. McDade), at Manchester 13 Oct 1965 (R. St. Cyr), Concord 15 Oct 1964 (K.E. Dymont), Brookline 16 Oct 1996 (M. and C. Neveu), Merrimack 19 Oct 1970 (R.W. Lawrence), Errol 21 Oct 1999 (R.A. Quinn), and Merrimack 22 Oct 1968 (R.W. Lawrence). Regularly found when searched for November through December since the 1970s; at least 4 in the coastal region at Durham and Stratham 4–24 Nov 2000 (S.R. Mirick). There were 11 records published in NHBR from 16 Aug to 28 Nov 2008, mostly south of the Lakes Region.

CBC reports since 1950 illustrate the winter distribution of this species: in at least 8 years at the coast; 2–3 years at Errol, Lee, Littleton, and Sandwich; and once at Goffstown, Hancock, Laconia, and Nashua. Late winter dates include “bird stays in barn” at Meredith 20 Jan to 7 Feb 1961 (Blake); 1 banded at Portsmouth 28 Jan 1973 (E.W. Phinney); 1 at Laconia 4 Feb 1955 (M. Pitman); 1 Durham 4 Feb 1961 (Merrick); 1 at Brookline 9 Feb 1997 (S. Spangenberg); at Monroe, Kensington, Gilsum, and Canaan in Feb 1998; reported at 8 localities in Jan and Feb 2009 (v.o.).

Northern Saw-whet Owls in New Hampshire are believed to be permanent residents in their breeding range but migrants from breeding territories to the north are thought to occur northbound in March–April and southbound in September–October. Numbers reported suggest that the volume of migrants fluctuates: high numbers of records in NHBR in 1995, a few birds mainly in the south in 1996, and a low total number of reports in 1997. While reports show birds throughout the state, most records come from the river valleys and coastal areas, probably because that is where the observers are concentrated.

ORDER CAPRIMULGIFORMES

FAMILY CAPRIMULGIDAE

Common Nighthawk *Chordeiles minor*

Status. Once a common migrant and widespread and locally common summer breeding species, it is now considered Endangered in the state. It is reported in small numbers each spring, there are a very few reports during breeding season each year, and the fall migration is larger though with fluctuating numbers.

Early reports to 1950. First listed for the state by Belknap (1792) as the “Night Hawk, *Caprimulgus americanus*.” Considered a common summer resident of open lands throughout much of New Hampshire by Coues (1868),

Maynard (1871), Goodhue (1877a), Farmer (1892b), and Dearborn (1898, 1903). Several of these authors also noted southbound migrant flocks of 100 or more in the last week of August. Reported at Windham by Morrison (1883); a nest, eggs, young, and an adult were photographed at Exeter 10 Jun 1901 (Selleck 1902). J. Dwight collected 3 specimens at Hollis 7 Jul 1883 (AMNH #361142) and 26 May 1876 (AMNH #361143–361144). Brewster (1937) considered it common to abundant as a summer resident in the Lake Umbagog area 1871 to about 1890; there was a noticeable decline by 1900, and he considered it only uncommon there by 1909, though migrant numbers remained high. Howe (1901–1903) called it uncommon at Bridgewater, but (1903) noted mi-

grants there of 12 on 25 Aug 1900, 25+ on 22–23 Aug 1901, 300 on 22 Aug 1902, and 100 on 22 Aug 1903. Over 100 nighthawks were migrating at Holderness 23 Aug 1903 (Comey 1904). White (1924b, 1937) thought it a fairly common summer resident at Concord, nesting on flat gravel roofs in the town.

G. H. Thayer (1912) and A. H. Thayer (1914) thought it an uncommon summer resident, a local nester and an “early autumn” migrant though declining in the Dublin area since about 1885. In the Jefferson region, Wright (1911) considered it an uncommon summer resident, his peak summer count being 16 on 2 Jul 1904. He reported 1 nest in 1904 and southbound flocks of 25–30 on 20 Aug 1901, a total of 60 the next day, and 12 on 22 Aug 1910. A rooftop nesting was reported in Nashua 21 Jun 1915, and a hatchling flew 8 Jul 1916 (Townsend 1916a). Lord (1918) reported its earliest spring arrival at Hanover of 21 May 1912–1917. One was at the Isles of Shoals 29 Aug 1929 (Allan 1931), the specific island not stated.

Reports submitted to RNEB in 1936–1949 show it to be a regular spring migrant in modest numbers, earliest known being 1 at Concord 6 May 1942 (F.B. White). Usual first arrival was 12–18 May and late migrants are suspected into the last week of May. Peak spring count was a surprising 50 on 21 May 1940 at Hanover (R. Verrill). No nest reports were received in 1936–1949. Southbound migration may begin as early as the last few days of July or the first week of August, and peak is the last 10 days of August. Peak counts in this period were 50 at Hanover 27 Aug 1944 (L. Forsyth), 107 at Ossipee 29 Aug 1937 (C.S. Robbins), and 300 at Hanover 21 Aug 1942 (R.L. Weaver). Latest report is 7 birds at New Hampton 9 Sep 1947 (V.H. Hebert).

1950 to present. Numbers of breeders have continued to decline regionally (Hunt 2009b). Record peak migrant numbers have been recorded, but total migrant numbers appear to have fallen since 1990.

Spring. Earliest known spring arrivals are at Hanover 23 Apr 1975 (S. Robinson) and Monroe 30 Apr 1965 (R.B. Emery). General first arrival date is 15 May. Locations of first arrivals are mainly in the Merrimack and Connecticut River valleys with few along the coast. Peak counts usually are low but during the 15–29 May period ranged 10–77 in recent years; half the peak counts are at the coast, the rest in the 2 major river valleys. Some high counts include 77 at Amherst 26 May 2008 (S. Spangenberg), 75 at Merrimack 20 May 2009 (T. Young), and 30 at Exeter 28 May 2005 (I.C. MacLeod), though most spring counts since 2000 have been in the 1–10 range. Spring migrant reports from the Isles of Shoals range from 9 May 1999 at Star Island (R.W. Suomala) to 1 at White Island 2 Jun 2006 (D. Hayward *et al.*). Latest coastal record is 25 at Hampton 3 Jun 2004 (D. Crowley). The largest spring flights tend to follow the major interior

river valleys, and a later coastal flight may consist of some birds headed to the Canadian Maritimes.

Summer and breeding. Traditionally, this species nested primarily on barren and burned-over land (Allen 1903, Brewster 1937). However, as the 1900s continued, they also became roof nesters and now few ground nesters remain. Richards (1958a), Elkins (1961), and Allison and Allison (1979) all comment that it had disappeared from most of its rural nesting localities by the 1950s but continued to nest on roofs in cities and towns. The *Atlas of Breeding Birds* project in 1981–1986 (Foss 1994) found possible breeding in 13% of priority atlas blocks, mainly in the south-central parts of the state; it was recorded in only 3 blocks north of the White Mountains. During the 1980s nesting was documented in 14 cities and towns; the only suspected rural nestings were in New London and Ossipee. The 1985 summer survey recorded a total of 96 birds in 19 towns, mostly south of the White Mountains. Reasons for the decline of breeding in towns include municipal insect spraying programs and loss of suitable flat gravel roofs. “Declines have been greater since 1980 than in the period 1966 to 1979. [New Hampshire Audubon] data suggest declines in the lower Merrimack valley, northwest Merrimack County, and the Pemigewasset valley by 1994...Although data from the late 1990s are limited, they indicate significant declines across most of the range...By this time the species had largely disappeared from coastal New Hampshire, the North Country, upper Connecticut River valley, and much of the Merrimack Valley” (WAP 2005, which also includes an excellent distribution map). A coordinated nighthawk survey in 1990–1991 found 108 birds in 16 towns, but by 2006 birds were found only in Concord and Keene. A project of spreading gravel on flat rooftops in Concord in 2007 to see if breeding could be increased was initiated (R.W. Suomala 2007). The only recent suspected rural nest sites since 2005 were in Sandwich, New London, the Ossipee pine barrens, and nests found on a rock ledge in Grantham and 1 in Lempster. See Project Nighthawk 2008 Summary (Suomala 2008). BBS population trend data show a very significant decline of about 9.1% per year for both 1966–2009 and 1999–2009 (Appendix IV).

Fall. Early indications of southbound migration include 100 at Newport 10 Aug 1962 (R. Coggeshall), “first migrants” at New Hampton 15 Aug 1972 (V.H. Hebert), first migrant at Andover 16 Aug 1972 (L.C. Rising), and first migrants at New Hampton 17 Aug 1968 (R.W. Smart). In many years the 23–29 August period has produced the highest counts and multiple counts showing general movement across the state. During 1950–1980, top numbers reached 150–400 regularly and peak counts were an exceptional 4000 at Plymouth 27 Aug 1976 (S.A. Fogleman), 552 at Hanover 30 Aug 1963 (C. Wellman), 500+

Epsom 28 Aug 1979 (B.R. Ring), and 500 Keene 5 Sept 1955 (S.H. Smith). In 1990–2009, however, high daily counts generally were 50–150 with a few exceptions: 1058 at Hancock 27 Aug 2005 (D. and L. Stokes), 750 at Nashua 31 Aug 1996 (R. Allard *et al.*), and 733 at Keene 30 Aug 2007 (L. and J. Tanino). The decline in daily and peak counts probably reflects smaller migrant numbers.

Uncommon at the Isles of Shoals in fall: single birds at Star Island 22 Aug 1979 (J. Ginaven); 22 Aug 2006 (M. and D. Hayward), 11 Sep 1999 and 22 Sep 2000 (both R.W. Suomala); and 1 on 24 Sep 2011 (E.A. Masterson). Latest mainland fall dates range from 1 September to 1 October with most 12–16 September. Extreme late dates include 2 at Dover 17 Oct 1971 (*fide* E.W. Phinney), 1 at East Kingston 17 Oct 1971 (E.W. Phinney), 1 at Nashua 20 Oct 1979 (R. Andrews), and 1 at Rye 24 Oct 1977 (H.W. Parker *et al.*). October records are possibly birds that were reverse migrants earlier, rather than lingerers; such a migration was noted as “70 in reverse migration heading northeast” at New Hampton 30 Aug 1966 (V.H. Hebert *et al.*).

Chuck-will's-widow *Antrostomus carolinensis*

Status. Vagrant from the south. Hypothetical. One report. A single probable migration overshoot bird was found on Star Island 21 May 1966 (V.H. Hebert, K.C. Elkins, R.W. Smart *et mult.*; see Smart 1966) and studied leisurely at relatively close range. Though 3 experienced observers were present, the diagnostic branched rictal bristles could not be seen for lack of a telescope, so the record was considered hypothetical by Smart. Interestingly, 1 was caught and banded at nearby Appledore Island, ME, about the same time of year, 30 May 1994 (S. Morris *et al.* *fide* D. Holmes; Perkins [1994]), the only known ME record. This species has been extending its range into southeastern MA since the 1970s and now breeds annually (Veit and Petersen 1993, BO database 2010).

Eastern Whip-poor-will *Antrostomus vociferus*

Status. Formerly a fairly common breeder from the White Mountains southward and sparingly north of there, it has become increasingly rare in the last 30 years. In 1980 it was listed as a Threatened species in New Hampshire and is now a species of Special Concern. It is usually found in areas of overgrown fields with brushy edges near the borders of open forests.

Early reports to 1950. First listed for the state as “Whip-poor-will, *Caprimulgus europeaus*,” by Belknap (1792). Coues (1868), Maynard (1871), and Goodhue (1877a, 1922) all considered it a common summer resident with the exception of the White Mountains and areas to the north. Fox (1876) reported its arrival dates in Hollis as

15 May 1874, 11 May 1875, and 6 May 1876, little changed from today. J. Dwight collected a female in Hollis 14 Sep 1876 (AMNH #361070). Morrison (1883) reported it present in Windham, and Read (1892) found it in Swanzey. Dearborn (1898) thought it common in Belknap and Merrimack Counties; his (1903) extreme dates for the Durham area were 13 May to 26 September, and he reported nests at Hampton (S.A. Shaw). Bolles (1893b) found it at Chocorua as late as 25 September. Brewster (1937) thought it a “rare summer resident” in the Lake Umbagog area though much of the land near the lake had been cleared at the time; he had only 1 certain New Hampshire record on 15 Sep 1895. Howe (1901–1903) described it as “common if not abundant” at Bridgewater.

Thayer (1912) found it common but local in the Dublin area. Wright (1911) called it “uncommon in summer” in the Jefferson region, having only 3 specific reports, but a pair was often located on Mt. Starr King “at an elevation of 1400 feet” (L.J. Rundlett). Lord’s (1918) earliest spring arrival at Hanover was 5 May, his six-year average 1912–1917 spring arrival date being 11 May. Kingsbury (1925) said it was present in Surry, and White (1924b) described it as a “common summer resident” at Concord, but later (1937) it had become only “fairly common” there. Forbush (1927) inferred that by that date it had become slightly less common in southern New Hampshire (*fide* J.A. Farley).

Reports submitted to RNEB in 1936–1949 show it to be a regular seasonal migrant and, presumably, regular breeder, though never recorded north of Monroe (L.E. Cole, R.B. Emery) in the Connecticut River valley and Eaton in the Saco River valley (R.P. Fox). Earliest reported spring arrival was 19 Apr 1941 at Ossipee (E.E. Pratt) though general first arrival was not until the first week of May. Usual last fall report was the middle 2 weeks of September, and extreme latest record in fall was 6 Oct 1946 at New Hampton (V.H. Hebert).

While Palmer (1949) found a population increase in the northern and eastern counties of ME from about 1905–1945 as land was cleared, the reverse was true in New Hampshire as reforestation and some urbanization occurred widely in the central and southern parts of the state. Reforestation brought increased numbers of terrestrial predators (Raccoons, Striped Skunks *Mephritis mephritis*, American Red Squirrels *Tamiasciurus hudsonicus*) and fewer acres of optimal habitat, even in the southern river valleys.

1950 to present. Continued moderate decline; it is now uncommon both north and south of the White Mountains. Declared a threatened species in New Hampshire in 1979 (Smith 1979). Breeding population listed as declining by Hunt (2009b).

Spring. Earliest known spring arrival is 1 at Londonderry

17 Apr 1968 (H.A. Reynolds); usual first arrival is 21 April to 5 May. Peak migration period is the first and second weeks of May, with late migrants into late May. Most first arrivals appear in the lower Merrimack River valley with fewer first arrivals on the coast or in the lower Connecticut River valley. Two far north first reports came from Monroe 25 Apr 1957 (G. Frazer) and Shelburne 4 May 1973 (R.A. Woodward). Eight were as far north as Jefferson by 21 May 2005 (P. Brown). Peak counts of heard birds include 10 in Merrimack County 17 May 1992 (R.A. Quinn), 10 at Durham 25 May 1964 (A.C. Borrer), 8 at Durham 10 May 1968 (L.G. Phinney), and 25+ at Exeter–Kingston 16 May 1971 (R.W. Smart).

Summer and breeding. Breeding season is late May to early July. Several authors (Richards 1958a, Ridgely 1977, Robbins *in* Foss 1994) note a decline in the species by 1950. Ridgely (1977) thought it had declined in the Squam Lake region, and Allison and Allison (1979) called it “rare,” no longer nesting in Dublin. The *Atlas of Breeding Birds* project in 1981–1986 showed potential breeding in only 63 priority atlas blocks (35% of priority blocks) and only 8 blocks were north of the latitude of Monroe. In summer 1985, there were reports from 57 towns. Two New Hampshire areas were studied closely after 2000: the Piscataquog River watershed study began in 2003 and the Ossipee pine barrens study began in 2006. A thirteen-state nightjar study began in 2004. All 3 projects continue (NHBR 22 [2]: 36–38, 25 [2]: 40–42, 25 [2]: 40–42, and 26 [2]: 42–44). A high count was 23 at Freedom in the

Ossipee pine barrens study 20 Jun 2008 (P.D. Hunt *et al.*). Elevation and foraging areas near forest edges appear to be important habitat factors (Wilson and Watts 2008). While most birds in breeding season are found in southern New Hampshire there are scattered reports from north of the White Mountains: Umbagog region 29 Jun 1959 (V.H. Hebert *et al.*), Pittsburg 22 May 1963 (F.T. Scott), Lancaster near the Mt. Cabot trailhead 31 May 1994 (R.W. and M. Suomala), Whitefield 22 May 1999 (P.D. Hunt), and 2 at Jefferson 11 Jun 2005 (D. Govatski). Breeding birds are concentrated in central Carroll County, a band from northwest Merrimack County to north-central Hillsborough County, and central Strafford County (WAP 2005, which includes a good state distribution map). See Whip-poor-will Project 2008 Summary in NHBR 27 (2): 47. Breeding population listed as declining by Hunt (2009b). BBS population trend data show a significant decline averaging over 6% per year in 1966–2009 and 1999–2009 (Appendix IV).

Fall. Primary migration period is mid-August to mid-September. Since 1970 there have been very few fall reports, generally from 25 August to 3 September. Late sightings include 1 at Rumney 12 Sep 2000 (B. Berti), 1 at Concord to 16 Sept 2006 (R.A. Woodward), 1 at Hanover 25 Sep 1958 (H.C. McDade), 3 at Bedford 26 Sep 1966 (R.W. Lawrence), “a recently dead bird” at Jefferson 7 Oct 1995 (G.W. Gavutis, Jr.), and 1 at Bedford 14 Oct 2005 (J. Daley) that was injured and later died.

ORDER APODIFORMES

FAMILY APODIDAE

Chimney Swift *Chaetura pelagica*

Status. Common breeding species throughout the state. Numbers have fluctuated over the years, and there was a modest decline in the breeding population statewide 1900–1950 and another one since. Now breeds almost exclusively in chimneys and other man-made structures. Regular spring and fall migrant.

Early reports to 1950. The first published report for the state is that of Belknap (1792), who listed the “Chimney Swallow, *Hirundo pelagica*.” In the 1800s and early 1900s several authors, writing about various sections of the state, agreed that it was a common summer resident: Belknap and Merrimack Counties (Dearborn 1898); Durham (Dearborn 1903, Scott 1921); Concord (White 1924b); Holderness (Comey 1904); Webster (Goodhue 1877a); Kearsarge, Bartlett, and Conway (Porter and Porter 1904); Conway and Bethlehem (Minot 1876);

Bridgewater (Howe 1901–1903); in the Dublin area (Thayer 1912); Crawford Notch (Marble 1907); and in Coos County (Maynard 1871). J. Dwight collected 2 at Hollis 19 May 1876 (AMNH #361354) and 24 Jul 1887 (AMNH #361355). Brewster (1937) found it common but not extremely numerous in the Lake Umbagog region where it bred regularly during his visits 1871–1909. Chadbourne (1887) documented a specimen caught alive 3 Jul 1886 in an unused chimney at Halfway House on Mt. Washington at 3840 feet elevation, the elevation record for the state. In the Jefferson region Wright (1911) thought it rather common in summer, reporting 14 pairs nesting in town chimneys on 10 Jun 1907 and observing that “swifts are frequently seen during the summer over the extensive wooded tracts of the Presidential Range.” Wright’s peak fall count was 42 on 23 Aug 1910. White’s (1937) earliest arrival at Concord was 26 Apr 1925, peak spring arrival period was 13–24 May, most birds were usually gone by 12 September, and his latest fall record was 16 Oct 1919. At Hanover, Lord’s (1918) earliest

spring arrival was 2 May and his six-year average 1912–1917 was 11 May. Allan (1931) reported migrants on unspecified islands in the the Isles of Shoals 25 Jun 1929 and 18 May 1930.

Reports submitted to RNEB in 1936–1949 show it to be a regular spring migrant in modest numbers. Earliest known in this period was 1 at Concord 22 Apr 1938 (F.B. White) and usual first arrival was in the first week of May. Peak migration period was 10–25 May and high counts in this period were all at Hanover: 50 on 12 May 1948 (L. Forsyth), 105 from 18–24 May 1942 (R.L. Weaver *et al.*), and 1500 from 21–24 May 1941 (R.L. Weaver *et al.*). In fall, peak migration period was the last week of August, and latest record was 9 Sep 1949 at Salisbury (K.C. Elkins).

1950 to present. Spring and fall migration dates are well-defined with most birds traveling along river valleys inland though there are a few notable coastal reports, especially in spring. Clear pattern of decrease from the mid-1950s and a continuing downward trend, leading to slightly later spring arrivals 1995 to date. There is a suggestion that it was a more common nester north of the mountains until the general decline. Local populations may fluctuate in relation to municipal spraying for insects. Breeding population listed as declining since 1990 by Hunt (2009b).

Spring. Earliest reported arrivals are at Newmarket 9 Apr 2002 (P. Hendrickx), at Exeter 10 Apr 1954 (D.W. Finch), and Charlestown 13 Apr 1978 (W.W. Kidder). Mean first arrival date 1950–2009 is 27 April. The majority of first arrivals appear in the Merrimack River valley with a few in the Connecticut River valley and at the coast. General arrival is the first week of May, and average arrival in Hillsborough and Cheshire Counties 1974–1985 was 5 May (H.M. Cadot). Most spring counts range 1–60 and some reach 75–300. The peak known counts are 2000 at Exeter 31 May 2003 (I.C. MacLeod), 2000 at Exeter 30 May 2004 (M.G. and R. Harvey), 1200–1500 at Manchester 9 May 1961 (J.H. Kennard), 1120 at Littleton 16 May 1962 (R.J. Bradley), and 500 at Exeter 22 May 2005 (P.D. Hunt *et al.*), counts over 400 being uncommon. Peak annual high counts tend to be from the coast. Two presumed late spring migrants were at White and Seavey Islands 4 Jun 2001 (D. Hayward *et al.*).

Summer and breeding. While breeding numbers appear to have been reasonably stable 1900–1950s, declines were reported in BBS reports 1968–1980. These show decreases both in total numbers found each year and in the number of localities, especially north of the White Mountains and particularly in 1962, 1963, and 1971. Ridgely (1977), Allison and Allison (1979) and Cohn-Haft (1995) considered it fairly common but local at Squam Lake, Dublin, and the Second College Grant respectively. Nonetheless, the *Atlas of Breeding Birds* project

1981–1986 found evidence of breeding in 93% of priority atlas blocks, so it can still be considered a regular and widespread breeder in the state overall. This is despite the declines of the last century during which it has become uncommon and local in some areas, especially in the last 25 years. BBS population trend data show a moderate decline averaging just over 3% per year for 1966–2009 and 1999–2009 (Appendix IV). Birds were found nesting in a hollow tree in Lincoln in 1965, the traditional site before chimneys were available.

Fall. Postbreeding or family group flocking can begin as early as mid-July: 8 at Gilsum 16 Jul 1994 (M. Wright). Staging for southbound migration often is observed around the first of August: 70 at Wilton 28 Jul 1991 (R.W. and M. Suomala), 813 at Littleton 30 Jul 1961 (R.J. Bradley), 300 at Conway 2 Aug 1994 (B. and P. McCarthy), 150 at North Conway 8 Aug 1977 (C. Casas). Peak migration period since 1950 is the last 10 days of August; there have been at least 8 reports of 200–350 and many of 75–150 in that period. Reported at Star Island 18–20 Aug 1981 (J. Ginaven). Peak counts have been: 4000 at Concord 25 Aug 1958 (C. Batchelder), 2000 at Penacook 25 Aug 1958 (C. Batchelder), 615 at Littleton 28 Aug 1963 (R.J. Bradley), and 400 at Nashua 8 Sept 1998 (R. Andrews). Usual late dates fall in the 1 September to 9 October period. Extreme late dates are at Exeter 13 Oct 1998 (S.R. Mirick), Manchester 1 Nov 1974 (T. Harwood), and East Kingston 8 Nov 2005 (D.W. Finch), the latter possibly brought north by an earlier hurricane. Three of the 6 latest dates occurred 1998–2005.

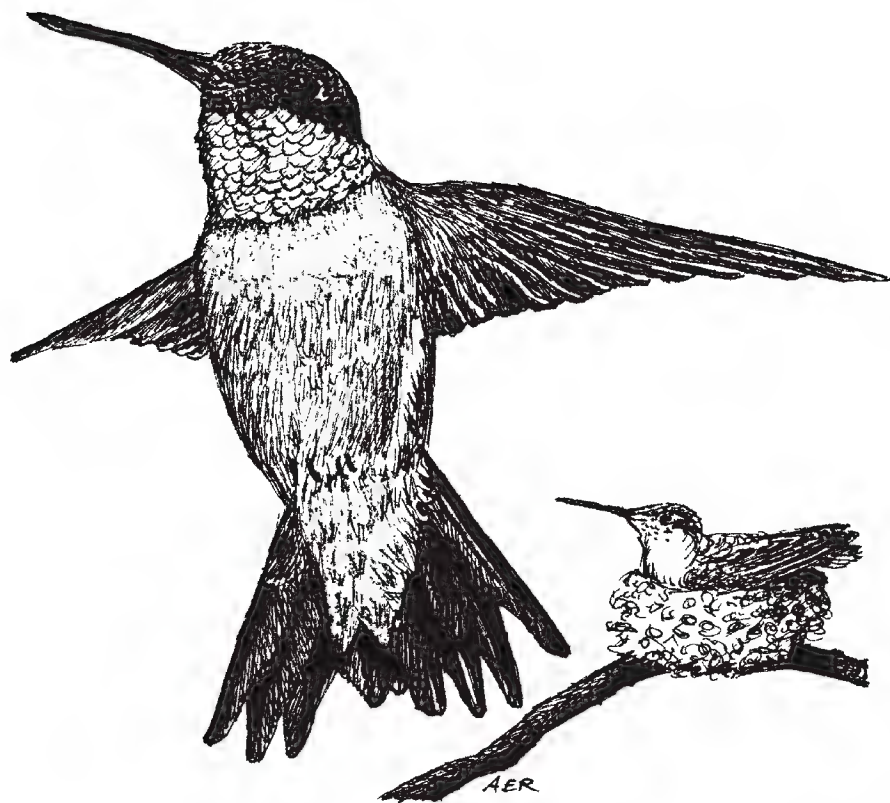
Chimney Swifts have been declining in eastern North America since 1966 (Sauer *et al.* 2008). Hurricane Wilma in Oct 2005 probably impacted swift populations from Quebec and the northeastern states during their southbound migration; fallouts were noted along the Atlantic coast, and in Quebec roost numbers declined 62% between 2005 and 2006 (Dionne *et al.* 2008).

FAMILY TROCHILIDAE

Ruby-throated Hummingbird *Archilochus colubris*

Status. Fairly common migrant and widespread breeder whose population was apparently reasonably stable 1900–1950 and has risen since. Obvious around gardens, but often overlooked in forest.

Early reports to 1950. The first published report for New Hampshire is that of Belknap (1792), who listed the “Humming Bird, *Trochilus colubris*.” Brewster (1937) described it as “abundant” in the Lake Umbagog region from 1871 through the 1880s after which it declined noticeably, though still was moderately common until the early 1900s. J. Dwight collected 1 at Campton Village 28



Jul 1885 (AMNH #361457) and 5 at Hollis in May, June, and July between 1875 and 1879 (AMNH #361458–361462). Goodhue (1877a), Dearborn (1898, 1903), Thayer (1912), and Howe (1901–1903) all considered it common at Webster, Belknap and Merrimack Counties, Durham, Dublin, and Bridgewater respectively. Allen (1903) thought it “not uncommon” statewide but “common” as a fall migrant; his latest fall record was 19 September, and he observed 1 at 3000 feet elevation in Crawford Notch.

Marble (1907) only found transients at Crawford Notch from 30 July to 23 September. Wright (1911) considered it not uncommon in the Jefferson region both in open country and in nearby forest clearings; his latest fall record was 28 Sep 1907. Lord’s (1918) earliest arrival at Hanover was 6 May and his six-year average was 21 May. bWhite (1924b) thought it common in summer at Concord, but later (1937) he described it as “rather uncommon,” indicating a decline; his extreme dates there were 8 May 1905 to 19 Sep 1919. Allan (1931) found 1 at the Isles of Shoals on 4 Jul 1929, the specific island not stated. Pettingill (1937) noted a concentration of hummingbirds at Holderness in 1936. Whittle and Whittle (1937) reported a pair nesting in the same place for 3 consecutive years at Peterborough, a pattern often mentioned in the literature. Allen (1935) reported 1 at Washington in Jun 1934.

Reports submitted to RNEB 1936–1949 provide an extreme early arrival date for a few males of 6 May 1941 at Holderness (L.J. Webster), usual first arrival in the 11–16 May period, and a buildup of local populations to as many as 40 at Holderness by 29 Jun 1941 (L.J. Webster). Southbound migration was under way by early August and peaked by the last 2 weeks of August; at favored lo-

cations, numbers have been recorded in the 50–100 range in late August such as at Holderness in 1938 (L.J. Webster). The last birds are usually gone by 15–23 September, and extreme late dates 1936–1949 were 28 Sep 1944 at New Hampton (V.H. Hebert) and 3–10 Oct 1945 at Hanover (L. Forsyth).

1950 to present. Breeding population listed as increasing by Hunt (2009b).

Spring. Extreme early spring arrivals are singles at Nelson 8 Apr 2009 (P. Brown, J. Tilden) and at Concord 10 Apr 2004 (D. Soule). Excluding these, usual first arrivals have been appearing earlier: in 1950–1980 the mean first arrival was 9 May, but 1990–2008 the mean first arrival was 3 May. Average arrival in Cheshire and Hillsborough Counties was 12 May in 1974–1985 (H.M. Cadot). General arrival is now by the second week of May. Most first arrivals were reported from towns in the lower quarter of the state, well south of the Lakes Region, but several more northerly towns (such as Wentworth and Monroe) had early reports. Birds typically arrive first in the south and reach northern areas and higher elevations later.

Female birds typically arrive later than males. In 2006 a peak hummingbird flight on 5–8 May was 25% female; a second flight on May 17–18 was nearly all females (Stichter 2006). In 1933–2005 there was a statistically-significant trend towards earlier first arrivals in MA (Stichter *op. cit.*) which was also reflected in New Hampshire. Some high spring counts include 50+ Durham 18 May 1965 (V.S. Wright), 20+ in 1 Apple tree at Monroe 23 May 1965 (ASNH field trip), and 25 at Monroe 23 May 1969 (R.B. Emery). North of the mountains, Cook (1950) summarized usual arrival dates at Berlin as 5–16 May.

Summer and breeding. Breeding is late May to July with some second broods being reported to late July. An example of a double brood is, “Nest started 24 May 1961, 2 young in nest 22 June, left 11 July. Second nest in another maple tree, 2 young raised,” at Londonderry (H.A. Reynolds). The *Atlas of Breeding Birds* project 1981–1986 (Foss 1994) reported at least possible breeding in 88% of priority atlas blocks, generally throughout the state though in fewer blocks in the mountains and the southeastern part of the state. Some high summer counts were 45 at Pittsburg 10 Jun 2003 (E.B. Nielsen) and 36 at a feeder in Thornton 30 Jul 2003 (J. McGovern). Taber (1952) found a nest at 3800 feet in the Sandwich Mountains 31 May 1936, the known elevation record. Ridgely (1977) called it widespread but rather uncommon at Squam Lake; Allison and Allison (1979) considered it a fairly common summer resident, commoner in migration; and Cohn-Haft (1995) considered it fairly common in summer at the Second College Grant. BBS population trend data showed a small increase averaging about 1.7% per year in 1966–2009 and 1999–2009 (Appendix IV).

Fall. Early signs of migration include 1 migrating in from offshore at the coast 2 Aug 2006 (S.R. Mirick), 1 at White and Seavey Islands 5 Aug 2000 (D. Hayward *et al.*), an unusual report at Mt. Garfield at 3600 feet elevation 7 Aug 1973 (B.H. MacDonald), and 40 at Chatham 18 Aug 2002 (R. Crowley). Peak of migration is typically in the last week of August (Stichter 2004); high fall counts occur late August to mid-September and include 17 at the coast 30 Aug 1965 (R.W. Smart), 40 at Londonderry 1 Sep 1961 (D. Holmes), 18 at Bristol 13 Sept 1967 (R.W. Smart), and 9+ at the coast 18 Sept 1971 (E.W. Phinney). Cook (1950) summarized usual departure dates at Berlin as 10–24 September. Occasional at the Isles of Shoals: peak count there is 7 at Star Island 8–10 Sept 1976 (R.S. Holt) and 1 farther east at Jeffreys Ledge 9 Sept 1973 (ASNH field trip). Last annual report dates range from 18 September to 5 November peaking about 30 September. Extreme late dates include New Hampton 5 Nov 1974 (Chase *et al. fide* V.H. Hebert), Nashua 27 Oct 2005 (R. Andrews), and Bow 22 Oct 1961 (H.B. Miller). Kilham (1953) reported hummingbirds drinking at sapsucker holes at Tamworth 3–6 Sep 1952, 1 of several such references in the literature.

Rufous Hummingbird *Selasphorus rufus*

Status. Rare visitor from the west. Fourteen reports between extreme dates of 18 July and 25 November. All but 1 accepted state records are of males.

1950 to present. The first state record was 1 found 18 Jul 1976 at Contoocook which was photographed and remained to 23 Jul (I. Bohanan, T. Richards *et mult.*). One was reported from Canaan (J.A. Bennett) 24 Jul 1976, 1 at Eaton 19 Aug 1993 (J. Simonds), 1 was photographed at Warner 27–28 Jul 1994 (I.C. MacLeod, S.R. Mirick, D.J. Abbott, A. Delorey *et al.*), 1 at Keene 6 Aug 1994 (H.T. Chase), 1 at Stratham 24 Sep 1994 (E.W. Phinney), 1 at Tamworth 10–13 Aug 1995 (T. Cleveland, E. Taylor), 1

photographed at East Kingston 18 Aug 1997 (E. Oechsle *et al.*), 1 photographed at Salem 23–24 Aug 2005 (P.D. Hunt, R. Andrews), 1 at Westmoreland for at least 2 weeks including 23–28 Oct 2007 (L. Gordon, R.W. Suomalainen *et al.*) was captured and banded 28 Oct by A. Hill, 1 at Antrim 22–24 Aug 2008 (K. and B. Pribble), and 1 at Plaistow 15 Oct to 9 Nov 2008 (S. and B. Cowan *et mult.*). One immature male or female at Hollis 12–30 Oct 2009 (S. Michaels *et mult.*) was captured 21 Oct and identified in the hand as Rufous. A male at Londonderry 10 Oct–25 Nov 1998 (L. Tate *et mult.*) was captured and moved to a greenhouse in MA where a female was wintering as freezing weather approached; however the female killed it while defending her own territory in the greenhouse. At least 20 records for MA (BO database 2010), 8 accepted records for VT (C.C. Rimmer pers. comm.), and 5 accepted records for ME (ME-BRC website).

Hummingbird sp. *Selasphorus* sp?

Status. Five hummingbirds have been recorded which apparently belonged to the Rufous/Allen's *Selasphorus rufus/sasin* species pair. For all records insufficient information was available to determine specific identity, in 2 cases because the bird was a young male or female and could not be confidently identified to species. Though Rufous Hummingbird is by far the more likely, Allen's Hummingbird has been found in the eastern United States several times in the last 2 decades, including MA.

Reports. One of unreported sex at Franconia 13 Aug 1987 (M. Phillips, M. Fuller, R.J. Bradley); 1 in the summer of 1991 reported secondhand in a newspaper, apparently a male, did not have enough details to distinguish between the 2 species; 1 at Merrimack 17 Aug 2003 (T. Young); a female photographed at Epsom 13 Oct 2005 (D. Desmarais); and 1 of unknown sex at Loudon 22 and 31 Jul 2006 (W. Baird).

ORDER CORACIIFORMES

FAMILY ALCEDINIDAE

Belted Kingfisher *Megasceryle alcyon*

Status. A moderately common summer resident and common spring and fall migrant. It winters in small numbers where there is open water. It appears to have declined modestly as a summer resident since 1950.

Early reports to 1950. The first state record is that of Belknap (1792) who listed "Kingfisher, *Alcedo alcyon*." In the 1800s it was considered a fairly common to common

summer resident nearly statewide (Allen 1903), in Belknap and Merrimack Counties (Dearborn 1898), Webster (Goodhue 1877a), Bridgewater (Howe 1901–1903), Dublin (Thayer 1912), Durham region (Dearborn 1903), Jefferson region (Wright 1911), and White (1924b, 1937). Brewster (1937) considered it a common summer resident in the Lake Umbagog region 1871–1909 and an abundant early fall migrant there in September. J. Dwight collected 2 at Hollis 17 Sep 1883 (AMNH #361941) and 3 Sep 1887 (AMNH #361942). Early records of it wintering were by Dearborn (1898) who recorded 1 on the Sun-

cook River in 1889–1890 and saw 1 in “midwinter” at Tilton; Allen (1903) who noted it year-round near Durham; Selleck (1916) who reported that it wintered in Exeter in 1914–1915; Goodhue (1922) who found it at Franklin 1 Jan 1915, through the winter there 1915–1916, and there on 9 Jan 1917; and White (1937) who called it occasional in winter at Concord.

Carey (1909) reported that it arrives in Portsmouth during the first week in April. Early breeding data include nesting at Manchester (Farmer 1892a), “nesting near Ashland 30 May 1925 with young nearly fledged by 5 July 1925” (Harding 1927a), and “nesting at Milford with 5 eggs 19 May 1888 and also in 1887” (Kittredge 1889). Elevation records were 2500 feet near Jefferson (Wright 1911), a nest on Mt. Washington at 2500–3000 feet (Baird *et al.* 1874, Vol. 2), and 3360 feet at Carter Notch (Allen 1903). Lord’s (1918) earliest spring arrival at Hanover 1912–1917 was 14 April, and White’s (1937) extreme dates at Concord were 9 Apr 1936 to 28 Oct 1912. Allan (1931) found 1 at Isles of Shoals 16 Jul 1929, the specific island not stated.

Reports submitted to RNEB 1936–1949 show it to be a common spring and fall migrant. Earliest arrivals in the Connecticut River valley are 25 Mar 1946 at Hanover (W.E. Lanyon) and all the way north in Woodsville 30 Mar 1949 (Mrs. H. Smith), and earliest in the Merrimack River drainage were 1 at Concord 29 Mar 1938 (F.B. White) and 1 at New Hampton 30 Mar 1946 (V.H. Hebert). Latest inland records in fall were 1 at Manchester 17 Nov 1937 (E.J. Goellner) in the Merrimack River valley and 1 at Hanover 24 Oct 1942 (L. Forsyth) in the Connecticut River valley.

1950 to present. Continues moderately common and widespread. Lingers into winter more often now than 50 years ago. Its population trend is listed as decreasing by Hunt (2012).

Spring. Birds found before 4 March are thought probably to have been wintering birds, either at the point of observation or nearby. Peak spring migration period is the last 2 weeks of March and mean arrival date for the last 30 years is 22 March. Most first arrivals appear along the coast or in the southern Merrimack River valley but have reached most other parts of the state within 2 weeks. Typical arrival at Littleton is 28 March (*fide* R.J. Bradley). Earliest arrival known at Pittsburg is 19 Apr 1968 (D.J. Abbott). Usual high daily counts of spring migrants are only 1–2; some higher counts include 8 in the Lakes Region 16 Apr 1961 (ASNH field trip), 5 at Hampton 30

Apr 1971 (E.W. Phinney), and 3–4 Shelburne 30 Apr 1973 (E.C. Weeks).

Summer and breeding. Breeding season is mid-May to mid-July; nesting birds are widely scattered and reports are few. BBS data show a low but consistent number of reports until the late 1960s when numbers dropped to an all-time low in 1971, followed by slight increase to 2009. The *Atlas of Breeding Birds* project 1981–1986 showed it to be broadly distributed in all parts of the state with nesting evidence in 88% of priority atlas blocks (S.B. Turner *in* Foss 1994). In the Squam Lake area it has been found up to 2500 feet elevation (Ridgely 1988). BBS population trend data report a decline of 1.7% per year in 1966–2009 and 1999–2009 (Appendix IV). Interesting summer reports are 2 at Sandwich Notch 31 Jul 1980 (B.S. Ridgely) and 5 at the coast 31 Jul 1966 (Rich).

Fall. There is evidence of southbound birds moving by early August and fall migration peaks in September: 13 at Concord 6 Aug 2005 (R.A. Quinn), 5 at Pittsburg 18 Aug 1964 (F.T. Scott *et al.*), 13 at Lake Umbagog 27 Aug 1999 (R.A. Quinn), 8 at Newington 4 Sept 1996 (G.W. Gavutis, Jr.), 15 at the coast 12 Sept 1965 (R.W. Smart, D.W. Finch), and 1 at Star Island 19 Sept 1974 (R.S. Holt). Regularly reported in low numbers October to early November. Late migrants or lingering birds occur regularly into early December, mostly at the coast with a few in the 2 major river valleys, occasionally in the Connecticut River valley north as far as Haverhill.

Winter. Birds have begun lingering longer from December into late winter than before 1950, surely related to where and for how long unfrozen fresh water was available. In the early 1950s the most frequent winter reports were from the coast and occasionally inland, such as singles at Exeter 19 Dec 1953 (D.W. Finch) and New Hampton 26 Jan 1954 (G.P. Baker *et al.*). By the late 1950s inland reports included Laconia 25 Jan 1959 (V.H. Hebert *et al.*) and Wilton 28 Feb 1959 (T. Richards). CBC data illustrate the increase in winter records. At the end of the 1960s the Coastal CBC typically recorded 4–7 birds and the Hanover CBC had reported it once, though no birds had survived the entire winter there. By end of the 1970s, CBC reports came from Peterborough and even Errol. By 1992 there were reports from 9 CBCs including Pittsburg and 14 birds were found on the Coastal CBC. While statewide CBC totals varied depending on weather, they rose from 18 in 1995 to 38 in 1998, to 36 in 2001, and 35 in 2006. Rarely birds have survived inland into late February: 1 at Walpole 24 Feb 2008 (A. Johnson).

ORDER PICIFORMES

FAMILY PICIDAE

Red-headed Woodpecker *Melanerpes erythrocephalus*

Status. Rare and local in the 1800s and rare since. Now found only a few times per year in the spring, rarely in summer, occasionally in fall, and very rarely overwintering.

Early reports to 1950. The first report for the state is that of Belknap (1792) who mentions “Red Head Woodpecker, *Picus erythrocephalus*.” Coues (1868) thought it had declined from earlier abundance by the time of writing. The next records are those of Maynard (1871) at Albany where it was “rare,” Goodhue (1877a) reporting 1 at Webster in June about 1869, and Morrison (1883) who noted 1 at Windham. Brewster reports 3 in New Hampshire in the Lake Umbagog region: single birds at Errol in Sep 1882 and late Jun 1885 and 1 on 18 May 1896 (Griscom 1938). Dearborn (1898) reports it 2 times at Alton, and Batchelder (1900) recorded 1 at Manchester 28 May 1899. Howe (1901–1903) reports 1 at Hebron on an unnamed date (Mrs. C.P. Webster). Allen (1903) lists it at Charlestown 25 May 1899 (W.M. Buswell); Hampton Falls in Jun 1886 and Sep 1897 (W.E. Cram); daily during breeding season near Dartmouth College in Hanover about 1881 (E.B. Frost); adults seen at Hollis 1 Aug 1880, 8 Sep 1884, and in Aug 1886 (W.H. Fox); at Milford (*fide* taxidermist J.P. Melzer); and at Seabrook in spring and in July about 1896 and in fall 1899. Dearborn (1903) reports 2 in the Shaw collection at Hampton, and Thayer (1912) called it “rare and irregular—4 records in 20 years” at Dublin. Wright (1911) saw 1 at Jefferson 16 Sept 1900 and reported 1 there 14 Jun 1906 (F.B. Spaulding, O. Durfee). Lord (1918) noted 1 at Hanover 20 May 1916, 1 of 3 years it was seen there. Caughey (1929) found 1 at Antrim 25 Nov 1928 to 19 Feb 1929, Shelley (1935a) saw 1 at Washington 17 Aug 1934, and White (1937) had records at Concord 2 Jun 1924 (G.P. Moulton), 28 and 29 May 1925, 4 Jun 1926 (G.P. Milne), 13 May 1930, and 23 Jun 1935.

Rather few reports were submitted to RNEB 1936–1949 but included a nesting pair at Fitzwilliam 18–25 Jun 1939 (W. Taber) which produced 2 young by 26 Aug that were last seen 4 Sep (Fenn 1940). Though this is often considered the first proved breeding in the state, that distinction may go to a Mrs. Allison who reported 2 young at Richmond 11–25 Aug 1940 where it had nested “for years.” One was seen at Hanover 10 May 1940 (L. Forsyth), a pair also nested at Fitzwilliam 17 Jun 1940 (Taber 1953), and 1 was at Wilton 10 Nov 1940 (F.L. Baldwin). One was at

Fitzwilliam 10 May 1941 (Mrs. S. Coffins), at Fitzwilliam again 4–5 Jul 1942 (W. Taber), 1 at Concord 6 May 1944 (Mrs. G.H. Davis *et al.*), and 1 at Monroe Jun to Aug 1949 (L.E. Cole). A migrant found at the Isles of Shoals 30 Aug 1929 was reported by Allan (1931), the specific island not stated.

Throughout New England the species was considered rare and irregular but more numerous prior to 1900 than since then (Forbush 1927, Veit and Petersen 1993). To summarize, before 1950 this species was known in the state from the earliest times and occurred spottily and irregularly in east-central Coos County in the north, especially in the Connecticut River valley north to Monroe and Jefferson, in the Merrimack River valley north to Concord and Alton and sparingly (probably mostly as a fall migrant) in the coastal region. The majority of reports were in May and June, only once into winter. The number of reports appears to have dropped from 1900 to 1950.

1950 to present. A rare and irregular transient most often found in spring and fall; a rare and local breeder but unconfirmed since 1995; listed as increasing by Hunt (2009b).

Spring. Dates for presumed migrants range from 16 March to 5 June, though confusion of early reports with overwintering birds is possible. Reports include possible early migrants at Goffstown 16 Mar 2005 (M. Provencher) and at Danbury 27 Mar 1995 (P. Lorette), and a late spring migrant at White and Seavey Islands 5 Jun 2002 (K. Bixler, S. Eliot). Spring migrant dates cluster in the 15–25 May period though some early June birds may also be migrants: 1 at Concord 1 Jun 1994 (T. Richards *et al.*) and 1 at Sandwich 5 Jun 2004 (J. Howe). A pair was at Bedford 31 May to 6 Jul 2008 (G. Knoettner *et al.*).

Summer and breeding. Reports range from 7 June through July. There have been fewer than 10 documented nesting records since 1950. The first confirmed breeding records since the 1940s were at Lyme 28–30 Jul 1970 (T.F. Bickel) and a pair in Littleton/Monroe from 19 May to 13 Jul 1970 (W.W. Kidder *et al.*). The northernmost known breeding report was at Monroe 24 Jun 1990 (R.B. Emery). The *Atlas of Breeding Birds* 1981–1986 had 3 possible and 2 confirmed breeding records; the latter were at Rumney in 1981–1983 and at Monroe in 1984 (Foss 1994). A pair with 2 fledged young was at Moultonborough 6 Aug 1995 (N. Baker). Birds present at Merrimack 25 Jun to 26 Jul 2002 (J. Normandin) and at Bedford 31 May to 6 Jul 2008 (T. Bronson, G. and M. Knoettner) may have bred there. Ridgely (1988) summarized the situation well when he said, “During the 20th century [it]... has

disappeared or declined in many parts of its range, especially the Northeast, due to loss of nesting habitat through clear-cutting and firewood cutting, widespread removal of dead trees and snags, and great increases of both European Starlings and automobiles.”

Fall. Many August reports refer to postbreeding dispersal birds; probable migrant reports range from about 1 September to 23 November, most of which are between 5 September and 30 October. The northernmost report for the state is 1 at Pittsburg 26 Sep 1963 (H. Drinkwater). Latest suspected migrant dates are 1 at Madbury 30 Oct 1992 (H.T. Chase) and 1 at North Hampton 27 Nov 2004 (S.R. Mirick, D.J. Abbott). One was at Star Island 9–14 Sept 2007 (D. and S. Casey *et al.*). Eight were reported in fall 2004, the highest number since 9 reported in fall of 1995.

Winter. From 1 December to 14 April there are over 50 reports 1950–2009. Of these 6 were “all-winter” observations, usually at feeders in the southern part of the state. The northernmost report is 1 at Jefferson 14 Feb 1998 (T. Sturtevant).

Red-bellied Woodpecker *Melanerpes carolinus*

Status. First found in 1958, initially in the southern counties, but now recorded throughout the state in small but increasing numbers. Breeding population in hardwood and mixed forest listed as increasing by Hunt (2009b).

Early reports to 1950. No confirmed records exist for this time period. Belknap’s (1792) listing of “Carolina Woodpecker, *Picus carolinus*,” could have been included on the basis of incorrect information given its known range prior to 1900: in 1840–1880 it was accidental in Connecticut (3 records: Sage *et al.* 1913) and even in New Jersey (4 records: Stone 1908). Forbush (1927) gives the first record for MA as 1863.

1950 to present. The first certain state record was an adult male at East Concord 25 Oct 1966 (E.T. Densmore) which stayed until spring 1967 when 2 others were found in Milford (R.C. and V.H. Hebert) and Hopkinton (L.G. and E.W. Phinney). The first winter record was a bird coming to a feeder in Barrington in 1970 (H. Spinney). From 1970–1980 there were scattered reports from the southern third of the state. In the 1980s birds were reported annually from the Merrimack River valley with the exception of 1 in Eaton 22 Jan 1989 (D.L. Eastman). The 1990s began with 10 reports 15 Dec 1990 to 20 Feb 1991, mainly in the lower Merrimack River valley, but with 1 as far north as Bath 12 Mar 1991 (J.C. McIlwaine). Birds began to appear in the southeast and coastal region in the early 1990s: 3 on the 1992 Coastal CBC. First breeding was suggested by copulating birds at Hollis in May 1991, and young of the year were found in Ply-

mouth in 1999, but the first documented breeding was not until 25 Jun to 24 Jul 2002 at Windham (M.G. and R. Harvey, J. Romano). One was at Jackson 16 Nov to 10 Dec 1993 (L. and P. Bissell *et al.*). Fall 1995 through spring 1996 produced 55 reports with some as far north as Lancaster 1 Dec 1995 (I. Baird) and Colebrook 9 May 1996 (D. Killam, A. Woodard). Numbers and distribution then contracted slightly for a few years, though it was well settled into the southern part of the state including the coast and both major river valleys north at least to the Lakes Region by 1997. Northernmost known breeding site is in Sandwich in 2010 and 2011.

Since 2000, its numbers and distribution have increased. One was reported at Errol 16 May 2003 (S. Ouellette) and at Monroe 22 Oct 2004 (E.A. Emery). Migrants were found at the Isles of Shoals at Star Island 1 Oct 2000 (R.W. Suomala) and 30 Sep 2007 (E.A. Masterson *et al.*), and on White and Seavey Islands 17 May 2007 (D. Hayward). Thirty-three birds from 30 localities were reported in fall 2004, the highest fall total recorded. Statewide, 2004 CBCs reported 77 birds including 34 from Nashua, and at least 22 reports were made mid-Mar through May 2004. Statewide CBC data show the rapid increase: 4 in 1990, 20 by 2003, 101 in 2009. The 2007 CBC listed 60 birds including 15 from the coast; the 2009 CBC listed 101 birds including 34 from the coast. In 50 years it has invaded and colonized virtually the entire state, though very sparsely in and north of the White Mountains.

Comment. This species’ expansion appears to have been aided by 2 factors: expansion of bird feeding, especially in winter which has improved winter survival; and cyclical climate warming has probably allowed more birds to survive than would have been likely 30–40 years earlier. See Hunt (2002) for more invasion details.

Yellow-bellied Sapsucker *Sphyrapicus varius*

Status. A common spring and fall migrant and a regular breeder throughout the state except in the coastal region. Its status has changed little in 200 years though it expanded in the central and western sections of the state as reforestation has occurred there.

Early reports to 1950. The “Speckled Woodpecker, *Picus maculosus*” of Belknap (1792) almost certainly refers to this species, especially in juvenile plumage, an opinion shared by Eliot (1960). Brewster found it an abundant summer resident at Lake Umbagog 1871–1909 (Griscom 1938) and as a common breeder in the White Mountains (Brewster 1876b). The Dwight collection contained 3 specimens from Campton Village taken 25 and 28 Jul 1885 (AMNH #362847–362849) and 1 from Hollis taken 19 Sep 1884 (AMNH #362850). Goodhue (1877a) found only 1 nest at Webster and considered it an uncommon summer resident there. Dearborn (1898) found it only a

local breeder in Belknap and Merrimack Counties. Clark (1899) mentions it nesting near Mt. Washington, Howe (1901–1903) thought it a common summer resident in the Bridgewater region, and Dearborn (1903) had only 3 records for the Durham area, once in spring and twice in fall.

Allen (1903) called it a fairly common spring and fall migrant, commoner as a breeder in the White Mountains and northward than in the Lakes Region and southward, though common at Chocorua (*fide* F. Bolles), around Mt. Monadnock (*fide* G.H. Thayer) and at Alstead (*fide* R. Hoffmann). Allen (1903) also mentions 1 at Charlestown 10 Nov 1898 to 5 Jan 1899 when it was collected (W.M. Buswell). Curiously, Marble (1907) reported it only once



at Crawford Notch in Aug 1905, and Wright (1911) found it a common summer resident but more numerous in the fall as a migrant in the Jefferson area. At Hanover, Lord's (1918) early arrival date 1912–1917 in spring was 9 April and six-year general arrival was 17 April. At Concord, White (1924b, 1937) considered it a rare spring migrant 16 April to 16 May and an uncommon fall migrant 22 September to 11 October, no mention of breeding. Shelley (1934f, 1936a) reported the first breeding records for the species in Cheshire County west of Mt. Monadnock 25 Jul to 12 Aug 1934.

Reports submitted to RNEB 1936–1949 show it to be a routine spring migrant with extreme early arrivals of 31 Mar 1945 at New Hampton (V.H. Hebert) and 7 Apr 1942 at Hanover (L. Forsyth), though general spring arrival was often not until the third week of April. The few available summer reports show it to have been spottily distributed as a breeder whose numbers varied from year to year. Earliest reported southbound migrant was 16 Sep 1943 at Ossipee (E.E. Pratt), peak migration was the last week of September and the first week of October, and lat-

est fall reports were on 23 Oct at Ossipee in 1943 (E.E. Pratt) and at New Hampton in 1949 (V.H. Hebert).

1950 to present. Total numbers of breeding birds appear to have increased slightly in this period, spring migrants have arrived earlier and wintering lingerers have appeared more often; the extended season may be due to a cyclical warming trend since the 1950s.

Spring. Earliest known spring arrival thought not to have been a wintering bird is 1 at Manchester 5 Mar 2009 (J. Duval). General first arrival has been getting earlier: in 1950–1980 it was 10 April, in 1990–2009 it was 3 April, and for 1996–2009 was 1 April. The majority of first arrivals were in the Merrimack River valley, some in the Connecticut River valley, and rather few in the coastal region. Most high counts were under 10; highest known single-day counts were 18 at Enfield 23 Apr 1997 (P.D. Hunt), 17 at Canterbury 18 May 2003 (R.A. Quinn), 15 at Lake Umbagog 19 Apr 2000 (R.A. Quinn), and 15 at Weare 3 May 2004 (G.W. Gavutis, Jr.). Wade (1952) found a bird dead after a late snowstorm in Tuckerman's Ravine, Mt. Washington, as early as 25 Apr 1951.

Summer and breeding. Breeding season is 15 May to 15 July. The *Atlas of Breeding Birds* 1981–1986 showed 74% of the priority atlas blocks contained some indication of breeding, only the coastal region showing no nesting evidence (L. Kilham *in* Foss 1994). Juvenile birds were reported with adults at Weare and Gilsum in summer of 2004. Some high summer counts include 62 in Pittsburg and 23 pairs at New Hampton in 1961 (R.W. Smart, V.H. Hebert). Breeding increased in central and southern New Hampshire since the late 1960s (Ridgely 1977, Allison and Allison 1979). BBS population trend data show a small increase to an average of about 2% per year in 1966–2009 and 1999–2009 (Appendix IV). Breeding population in spruce-fir forest is listed as increasing since 1990 by Hunt (2009b).

Fall. The earliest southbound migrants are suspected by early August, but peak migration is 20 September to 15 October. Some high counts include 10 at New Hampton 20 Sept 1976 (V.H. Hebert) and 8 at Plymouth 29 Sept 2001 (J. and R. Williams). Migrant dates at the Isles of Shoals include 3 at Star Island 19 September to 1 there 25 Oct 1970 (D.W. Finch), as well as 1 20 miles offshore 21 Oct 2005 (S.R. and J. Mirick). Late fall interior reports include Campton 19 Nov 2002 (S.R. Mirick), Monroe 15 Nov 1971 (P. Powers *fide* R.J. Bradley), Sandwich 12 Nov 2003 (A.J. Vazzano), and Franconia 9 Nov 1971 (M.L. Fuller).

Winter. Selected recent wintering records were at Nashua 22 Feb 1993 (R. Andrews), Moultonborough 14 Jan 2001 (J. Currier *et al.*), and Nashua 24 Feb 2002 (R. Andrews); wintering lingerers have occurred nearly every winter since. The first CBC report was in 1990 on the Peterborough–Hancock CBC 15 Dec. Others since have been on

CBCs inland at Laconia, Keene, and Hanover; near the coast at Atkinson, Dover, and Lee/Durham; and on the Coastal CBC.

Taxonomic note. A bird collected at Lake Umbagog in New Hampshire by Brewster and originally attributed to the more western and northern Red-naped Sapsucker *S. nuchalis* upon re-examination was determined to be *S. varius* (Allen 1903, 1909; Griscom 1938).

Downy Woodpecker *Picoides pubescens*

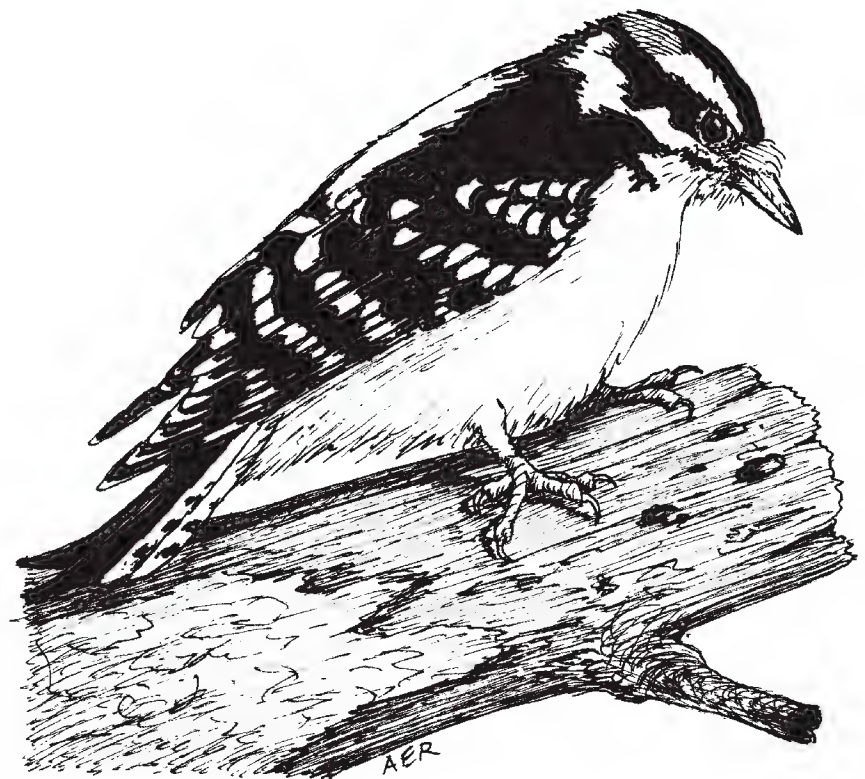
Status. A common and increasingly numerous resident throughout the state and an occasional migrant. Its general numbers and breeding territory expanded during the reforestation period 1880–2009.

Early reports to 1950. First recorded for the state by Belknap (1792) who listed the “Wooly Back Woodpecker, *Picus pubescens*.” It has been considered common statewide since earliest times by almost every early writer: Coues (1868), Maynard (1871), Brewster 1871–1909 in Griscom (1938), Goodhue (1877a, 1922), Dearborn (1898, 1903, 1905), Howe (1901–1903), Allen (1903), Thayer (1912), Wright (1911), and White (1924b, 1937). Only Marble (1907) thought it uncommon at Crawford Notch. The Dwight collection contained 8 specimens taken at Hollis 1875–1887 in 5 different months (AMNH #363337–363344) and 1 taken at Campton Village 25 Jul 1885 (AMNH #363345). Allen (1903) mentions that it breeds up to 3000 feet elevation and he saw 1 at over 4000 feet in Tuckerman’s Ravine 1 Aug 1899, the known elevation record. Several writers commented that it was essentially nonmigratory, though Forbush (1927) and others suggested that it may withdraw southward slightly in winter, particularly in the northern part of the state. Wright (1911) thought it about “twice as numerous” as Hairy Woodpecker at Jefferson.

1950 to present. It has a stable resident population with some increase in both summer and winter counts 1950–2009. Winter counts north of the mountains seem lower than counts there during summer, possibly indicating some withdrawal from northern areas in winter. Population trend listed as stable by Hunt (2012).

Spring. While most birds are thought to be resident where they are, there is some evidence of seasonal migratory movement. A presumed northbound migrant was at treeless White and Seavey Islands 8 May 2002 (D. Hayward *et al.*).

Summer and breeding. Breeding season is late April–July. The *Atlas of Breeding Birds* 1981–1986 found evidence of breeding in 96% of priority atlas blocks statewide, not indicating any regional levels of density (Foss 1994). National BBS data suggest a stable population in the northeast but a small decline nationally. New Hampshire BBS population trend data show an increase of 1.6% per year



in both 1966–2009 and 1999–2009 (Appendix IV). Breeding population in hardwood and mixed forest listed as increasing by Hunt (2009b). There are several reports and photographs of birds 1997 to date with a condition known as erythrism where plumage normally white was yellow.

Fall. A presumed postbreeding wanderer or early southbound migrant was at White and Seavey Islands 3 Aug 1997 (C.J. Martin, D. Brown), and a presumed migrant or postbreeding disperser was banded at Star Island 30 Sep 2000 (R.W. Suomala *et al.*). Virtually all Downy Woodpeckers banded at the Isles of Shoals in fall have been hatch-year birds (R.W. Suomala pers. comm.).

Winter. Numbers have shown marked increases 1950–2009. On the Coastal CBC, ten-year average numbers beginning with the 1950s were 9, 46, 70, 93, 109, and 111 (2000–2009). Statewide 1995–2009 CBC numbers ranged from 646 to 1221 with an average of 865. Single-year numbers fluctuate widely in the CBC data yet show major increases over time. These increases could be explained by more winter feeders with suet and larger numbers of people reporting as well as increased number of birds.

Hairy Woodpecker *Picoides villosus*

Status. A relatively common resident throughout the state, especially in mature woodlands. A few birds migrate in spring and fall, accounting for fluctuations in numbers in winter, especially near the coast. Like the preceding species, its general numbers and breeding territory surely expanded during the reforestation period 1880–2000.

Early reports to 1950. First reported for the state by Belknap (1792) as the “White Tail Woodpecker, *Picus villosus*.” Most early writers considered it a common permanent

resident (see list under Downy Woodpecker above) though there were differing opinions about its status in the coastal region and concerning its migration. The Dwight collection included 5 taken at Hollis 1875–1887 in 4 different months (AMNH #363096–363100) and 1 from Campton Village taken 25 Jul 1885 (AMNH #363101). Allen (1903) thought it primarily a bird of higher elevations in the White Mountains and in the North Country, breeding at 3000–4500 feet. Howe (1901–1903) only had 2 reports for the Bridgewater area, 1 in 1896 and on 2 Jul 1900. Several authors mention that it appears to migrate in fall to some extent, both from higher to lower elevations and from north to south. Marble (1907) recorded a pair only 1 year at Crawford Notch in summer but noted a usual influx there by late August. Goodhue (1922) thought it common generally but uncommon near the coast in breeding season. White (1932a, 1933, 1934) comments on Hairy Woodpeckers returning to Concord in winter that were not present there in summer. Shelley (1938b) describes birds moving west toward the Connecticut River in late August and early September through East Westmoreland 1930–1935, and specifically on 3 Aug 1933; Bent (1939) quotes Shelley stating that he sometimes saw migrants “at irregular intervals until late October. On 24 Oct 1934 birds were moving from 12:00–16:00. They would keep about 40 yards apart and call to each other but they seemed not to stop or feed.”

1950 to present. Now breeds statewide and both breeding and wintering numbers have increased. Factors accounting for this probably include a more numerous and skilled corps of field birders, reforestation, and the increase in winter bird feeders. Some modest evidence of seasonal migration continues.

Spring. In New Hampton 12 Apr 1971 (V.H. Hebert) noted, “that all had left for the north and on 24 April there were 2 resident birds in New Hampton” newly arrived.

Summer and breeding. The *Atlas of Breeding Birds* 1981–1986 documents breeding evidence in 98% of all priority atlas blocks statewide. This included the coastal region which represents an expansion of its breeding range from that reported by earlier writers (K.C. Elkins *in* Foss 1994). BBS population trend data show a small increase of under 1% per year for 1966–2009 and 1999–2009 (Appendix IV). Breeding population listed as stable since 1990 in hardwood and mixed forest by Hunt (2009b). Birds with erythretic plumage have been photographed in color (S. Young).

Fall and winter. CBC reports show fluctuations in its numbers but overall a marked increase. Numbers statewide 1995–2007 ranged from 306 to 682. At the coast in that period its numbers ranged from 9 to 48 while the range at in Errol was 5 to 37. A very rare migrant on any



of the Isles of Shoals (R.W. Suomala pers. comm.). Generally this species is about half as numerous as Downy Woodpecker.

Taxonomic note. The local breeding form in the state is nominate *P. v. villosus*. The form *P. v. septentrionalis* is to be expected rarely, probably during occasional irruptions from the north; there is 1 specimen of this form taken at Shelburne 27 Dec 1895 by a collector whose name is now lost (MCZ #78585). Two birds of this form were also collected by Brewster at Lake Umbagog 10 Oct 1885 (MCZ #210929) and 27 Oct 1884 (MCZ #209605) (Griscom 1938) but it cannot now be determined in which state they were collected. This form has been collected at Nahant in MA 23 Oct 1946 (Veit and Petersen 1993), a bird that probably passed through our state to reach there. Palmer (1949) points out the problem of identifying *septentrionalis* definitively because of a north-south cline in size and color pattern and an east-west cline in bill size.

American Three-toed Woodpecker *Picoides dorsalis*

Status. A very rare bird of the northern forest and mountains. More numerous in the 1800s. Reports have decreased since 1900 with only a handful of sightings 1985–2009. Its status is now considered threatened in New Hampshire.

Early reports to 1950. From colonial times until the early 1900s, this was apparently a very uncommon to rare but regular resident of higher elevations in the White Mountains and northward, mostly in virgin spruce and fir forests before they were cut. Several early writers each had a record or two: Maynard (1871) collected 1 at Errol 31 Oct 1869; Brewster (1898b) collected 2 males at

Gorham 30 Jul 1870; Brewster found it in New Hampshire only 3 times at Lake Umbagog from 1871–1909: 25 May 1880, 26 Oct 1889, and a nest 2 Jun 1897 (Griscom 1938); Bolles (1893b) found it on Mt. Passaconaway, possibly its southern breeding limit; and Chadbourne (1887) reported a female and young collected at 3960 feet at Hermit Lake, Mt. Washington, in Aug 1884 and 1 seen in Great Gulf in the White Mountains 5 Jul 1886.

Allen (1903) considered it more common than Black-backed Woodpecker, especially at 3000–4000 feet in the White Mountains; he found it in Carter Notch and observed 1 at 3400 feet on Carter Dome 27 Dec 1900. There are 10 specimens in the MCZ collection taken 1879–1900, all in the White Mountains and Coos County except for 1 as far south as Albany. Marble (1907) stated that “a few have been seen in late August and in September” at Crawford Notch. Wright (1911) considered it a rare resident, described a nest found 5 Jul 1905 and mentioned 4 other sightings in the Jefferson region 1904–1910. Records by Rogers (1902–1919, 1906) include: 1 on 2 Sept 1905 near Third Connecticut Lake; 21–23 Jul 1908 a family at Third Connecticut Lake; 12–15 Aug 1914 a family at Third Connecticut Lake; and 4 Aug 1908 2 at Hermit Lake. A flock of 30 woodpeckers, half of which were American Three-toed, were found near Mt. Pisgah in Coos County from mid-Sep into Oct 1917 (Whittle 1920). On 31 May 1937 an adult male was seen at 3300 feet on Sandwich Dome (Taber 1952).

South of the White Mountain area, the only known early record for this species was 1 collected at Webster in “winter of 1875” (Goodhue 1877a); curiously he did not list it later (Goodhue 1922) but did mention a female he collected at nearby Boscawen 11 Mar 1876, perhaps a more precise description of the prior record. Only 3 reports were submitted to RNEB in 1936–1949: 1 at Waterville Valley 31 May 1937 (W. Taber, R. Tousey), 1 at Jennings Peak in the Sandwich Range 30 Jul 1938 (Mrs. Mills), and 1 reported on the Mt. Washington CBC 26 Dec 1942 (J. Kriebel).

1950 to present. There have been over 60 reports since 1950. It was observed in the summer months at Pittsburg in 14 separate years and 2 nests were found there; most of these observations were near East Inlet. There were at least 30 reports in the White Mountains in summer months 1956–1984 including Bartlett, Bethlehem, and Mt. Passaconaway, the southernmost summer location known (WAP 2005). An unusual report was of a female at Laconia 10 Oct 1961 (C. Noyes). It was reported in December in 6 years: 3 times in Pittsburg, once each in Errol and Franconia, and 1 January report from Mt. Lafayette. The most unusual report was 1 as far south as Newmarket 26–30 Apr 1975 (Titus *fide* A.C. Borrer), 1975 being the last year of a major winter irruption of Black-backed Woodpeckers and American Three-toed Woodpeckers in the northeast.

There were several reports in 1980, including on Nancy Pond Trail on 7, 8, 20, and 22 Jun (*fide* B.S. Ridgely); a “male and female seen, young heard, photographs taken” at Greeley Ponds, Livermore, 10 Jul (R.A. Quinn); and 12 Jul at Pittsburg (E.W. Phinney). During the *Atlas of Breeding Birds* project 1981–1986, only 1 probable and 2 possible sites were located at Success 6 Jul 1986, and in Livermore and Millsfield (Foss 1994). Recent reports include 1 at East Inlet, Pittsburg, 12 Jun 1995 and 9 Jun 1996 (both D. Strong *et al.*); on Mt. Adams 26 Oct 1996 (D. Govatski, E. Rolfe); Mt. Tom area at 2800 feet elevation, Bethlehem, 6 Aug 1997 (J. Batt); East Inlet Stream above the impoundment at Pittsburg 16 May 1998 (M.T. Martin); and at Thompson and Meserves Purchase 14 Jul 2000 (R. Frechette), the most recent available despite a great increase in active field observers since 1990. The WAP (2005) summary includes an excellent table of observations.

Black-backed Woodpecker *Picoides arcticus*

Status. An uncommon resident in the White Mountains and northward though less numerous than in the 1800s due to logging of virgin spruce and fir. Believed essentially nonmigratory, though occasional winter irruptions send birds well south of the normal range and a few birds may linger in the south into the following summer.

Early reports to 1950. The “Swallow Woodpecker, *Picus hirundenaceus*,” of Belknap (1792) could belong here, the name taken from its practice of occasionally nesting in tree stubs in swamps and at the edges of bodies of water as Tree Swallows commonly do, as pointed out by Brewster (1937). A bird primarily of virgin spruce and fir, its numbers must have been greatly reduced in the nearly statewide deforestation period 1750–1880. Brewster found it a “locally common permanent resident” in the Lake Umbagog region 1871–1909, though becoming less numerous there by the end of that period due to logging (Griscom 1938). It may have nested as far south as Mt. Monadnock (Peabody 1840), which may have still been heavily forested at the time. By the end of the 1800s, most available reports from presumed breeding areas in old-growth forest came from the greater White Mountain region or farther north: 1 taken in late fall at Strafford (Palmer 1871), Minot (1876) found a nest in the Conway–Bethlehem area, 1 was reported from Mt. Lafayette in Jun 1886 (Faxon and Allen 1888), Bates (1891) found 2 nests with young in the Pemigewasset Wilderness, Bolles (1893b) found it on Mt. Passaconaway in summer, 1 was found on Mt. Moosilauke on 4 October about 1897 (W. Faxon), and at Albany 3–4 were seen in late Dec 1899 and on 18 Feb 1901 (G.C. Shattuck).

There are 5 specimens in the MCZ collection taken 1879–1899, 2 from Coos County and 3 from the Albany area. Wright (1911) considered it “an uncommon resident”

which he found breeding regularly 1903–1910 in the Jefferson region, at Randolph, and on Mt. Starr King down to an elevation of 1100 feet. Allen (1903) thought it less common than the American Three-toed Woodpecker statewide at the time, certainly a dramatic difference from 75–100 years later. One was reported from the Connecticut Lakes above Pittsburg including Third Connecticut Lake 13 Sept 1914 (C.H. Rogers), and Whittle (1920) noted several together with American Three-toed Woodpeckers near Mt. Pisgah in Sep/Oct 1917. There were no reports to RNEB in 1936–1948, but 1 was seen at Second Connecticut Lake 7 Aug 1949 (C.H. Rogers).

This species occasionally irrupts southward in winter and then can be found well south of its normal breeding range, a few birds sometimes lingering into the following spring and summer. Such events account for the report of Goodhue (1877a, 1922) that it was a very rare fall and winter visitor at Webster; 2 found at Newfound Lake 18 Aug 1899 (A.L. Reagh); 1 at Chesham 18 May 1899 (Thayer 1902); an irregular winter visitor to Belknap and Merrimack Counties and 1 at Alton about 20 Dec 1890 (Dearborn 1898); Allen's (1903) report of 1 in fall at Hampton Falls (W.E. Cram) and birds shot at Seabrook in Nov 1888 and on 26 Nov 1899 (A.A. Eaton); and Dearborn's (1903) report of 2 females present at Durham 1897–1898 and 4 there in fall 1899. White (1924b, 1937) noted 1 at Concord 15 Nov 1925 (H.R. Roberts) and possibly the same bird seen there 9 Mar 1926 and 24 Apr 1926 (G.P. Milne). Taken together, the above reports indicate major irruptions in the winters of 1897–1898 and in 1899–1900 and possibly a modest one in 1925–1926. Van Tyne (1926) described an irruption of this species in Oct 1923 to 12 Jun 1924 which included 3 in Randolph 11 Feb 1924. Bent (1939) mentions that the 1923–1924 irruption continued on a smaller scale in 1925–1926. He concluded that an Eastern Spruce Budworm *Choristoneura fumiferana* outbreak 1909–1914 in eastern Canada and ME killed many trees, so bark beetles and borers then irrupted and woodpeckers feeding on them raised large numbers of young; then as food became scarce in winter, many birds moved south and may have done so for more than 1 winter.

1950 to present. As reforestation has continued 1900 to date, this species' numbers and breeding area may have grown despite the loss of some spruce-fir forest to logging. It has been seen in summer in the Pittsburg area and northern Coos County each year since at least 1949. Usually there has been at least 1 summer report from the White Mountains. The *Atlas of Breeding Birds* project 1981–1986 found evidence of breeding in 8% of the priority atlas blocks, ranging from the Sandwich range in the south to the White Mountains, especially in northern Coos County (L. Kilham *in* Foss 1994). Fourteen individual birds were reported in the White Mountains and

northward in summer 2002; 20 were reported in summer 2005 (v.o.). It is regularly reported on CBCs in that region, high counts being 6 at Pittsburg in 1982, 3 there in 1962, 15 at Errol in 1986, and 3 there in 1987. Cohn-Haft (1995) describes it as a “common breeder and permanent resident” at the Second College Grant.

Invasions into and south of the central part of the state have been reported in several winters, coinciding with irruptions also reported in other states. West and Speirs (1959) described the 1956–1957 and 1957–1958 winter invasions and listed Monroe, Littleton, Lancaster, Pinkham Notch, Nottingham, Hollis, Peterborough, New Hampton, and Concord as places where birds were reported from fall 1956 to spring 1957. The authors suggested that “disastrous fires” in the north produced a “staging area.” The 1957–1958 invasion brought birds to New Hampton and Jaffrey in Oct, winter records at Andover and Peterborough, and April records in Durham and New Ipswich. A 1960–1961 invasion brought 2–3 in fall to Moultonborough, 2 to Dunbarton, 1 to Concord, 2 to Canterbury, 2 to Deerfield; winter birds to Monroe, Tamworth, 3+ to Dunbarton, and Peterborough; and birds in spring (some through May), to Dunbarton, Sandwich, and New Hampton. A 1965–1966 invasion brought fall birds to Conway and Monroe and spring birds to Hollis and Durham. A 1974–1975 invasion brought fall–winter birds to Concord, Goffstown, and Barrington, a bird to Campton in May, and a bird to Bow in Jun. Single reports from south of the White Mountains in non-invasion years have been 1 at Manchester 15 May 1994 (L. Hunter), at Warren 15 May 1994 (P.D. Hunt), at Campton 5 Aug 1995 (A. Greenwood), at Nelson 20 Nov 2000 (E. Lloyd, D. Gibbons), at Effingham 13 Mar 2005 (G. McElroy), at Nottingham 22 Sep 2007 (T. Bronson *et al.*), and at Concord 18 Nov 2007 (P.D. Hunt).

Northern Flicker *Colaptes auratus*

Status. A common migrant and summer resident statewide but less common in deep forests above 2500 feet elevation and in Coos County. Typically overwinters in small numbers along the coast, rarely inland. Numbers have declined since 1960s but it is still common.

Early reports to 1950. First reported by Belknap (1792) as “White back Woodpecker, *Picus auratus*,” and probably was common to abundant at the time. Brewster found it a common summer resident and an abundant fall migrant in the Lake Umbagog region 1871–1909, including an observation of 400–500 on 26 Sep 1898 (J.C. Melvin) near Lakeside, though most daily peak counts were in the 15–40 range (Griscom 1938). The Dwight collection contained 5 specimens from Hollis, 4 taken Apr to Jul 1876 and 1 in Jun 1883 (AMNH #362086–362090). Goodhue (1877a) thought it an abundant summer resident at Webster, Howe (1901–1903) thought it common around

Bridgewater, and Marble (1907) found it only a migrant at Crawford Notch 10–25 September. Dearborn (1898) called it an abundant summer resident in Belknap and Merrimack Counties and mentions 1 in Alton in January. Allen (1903) thought it a common summer resident generally, reported he had never seen it above 2000 feet elevation in breeding season, but said it later occasionally dispersed to 3000 feet and he once found it at 3360 feet at Carter Notch. Dearborn (1903) said it occurred routinely at the coast in winter. Thayer (1912) thought it common in summer and abundant in migration at Dublin. Wright (1911) considered it “a rather common summer resident of the more open country and thinned



woods but not found in the deep forests;” he also noted a migratory flock of nearly 100 on 16 Sept 1903, such flocks usually in the 15–20 range. At Concord, White (1924b, 1937) considered it a common summer resident, his earliest spring arrival being 23 March in 1897 and 1921.

Reports submitted to RNEB in 1939–1949 show an extreme early spring arrival of 5 Mar 1939 at Hanover (R.L. Weaver), usual arrival not until the last week of March or early April. Peak fall migration period was 19 September to 2 October at Ossipee (E.E. Pratt) and latest migrant noted was 1 at Pinkham Notch 17 Oct 1942 (C. Robbins). One in early winter was at Manchester 14 Dec 1937 to 3 Jan 1938 (E.J. Goellner).

1950 to present. There is evidence of a general decline since the 1960s though it is still common.

Spring. Earliest suspected arrivals are 1 Mar 1997 at Newmarket (S.R. Mirick) and 2 Mar 2006 (G.W. Gavutis, Jr.), and mean first arrival is 21 March. Mean first arrivals have been increasingly early in recent years: 1950–1980 mean was 29 March, but in 1990–2008 the mean was 12

March. Peak migration period is usually the last 2 weeks of April. Peak counts have fallen over time; examples in 1950–1980 were 65 at Durham 18 Apr 1964 (A.C. Borror), 48 at New Hampton 28 Apr 1969 (R.W. Smart), and 40 at the coast 18 Apr 1964 (K.C. Elkins); examples in 1990–2008 were 28 at Newington 21 Apr 1996 (R.W. and M. Suomala), 25 at Sandwich 12 Apr 1997 (A.J. Vazzano), and 25 at Rye 23 Apr 1996 (P. Newbern). Sixteen were as far north as Errol by 28 Apr 2007 (M. and R.W. Suomala). Migrants at Star Island were 15+ on 25 Apr 1965 (ASNH field trip) and 1 on 1 Jun 1969 (E.W. Phinney).

Summer and breeding. In 1964 Vera Hebert commented that flickers “showed a considerable drop in numbers all over the state” (NHAQ 17 [4]: 145). New Hampshire BBS population trend data show a decline averaging about 3% per year in 1966–2009 and 1999–2009, though regional and national declines have not been quite so severe (Appendix IV). Possible reasons for the declines include severe 1976–1977 and 1977–1978 winters, Dutch elm disease (which produced a temporary supply of food and nesting sites which are now gone), and predation of nest sites by European Starlings. Others have suggested that flickers expanded their numbers during a period of abundant food supply but are now returning to a base population. Despite its decline most observers still consider it common. The *Atlas of Breeding Birds* project 1981–1986 found evidence of breeding in 95% of all priority atlas blocks, the few missing blocks being in the White Mountains and Coos County where it has never been as numerous (L. Kilham *in* Foss 1994). Breeding population listed as declining in hardwood and mixed forest by Hunt (2009b).

Fall. The first southbound birds are often detected by mid-August. Notable late summer reports include 30 at Jefferson 19 Aug 1999 (S.B. and M. Turner) and 30 at Charlestown 30 Aug 1965 (W.W. Kidder). Frequency of reports rises and peak numbers occur in late September to early October. Peak counts 1950–1989 include 600+ at New Hampton 3 Oct 1969 (R.C. Hebert), 222 at New Hampton 1 Oct 1975 (R.C. Hebert), 200 at Moultonborough 3 Oct 1959 (I.A. Behr), 147 at New Hampton 20 Sep 1958 (V.H. Hebert), and 110 migrating at New Hampton 2 Oct 1966 (V.H. Hebert). Peak counts 1990–2008 have been lower: 34 at Hillsborough 27 Sept 1994 (R. Sprague), and 30 at Pembroke 5 Oct 1991 (R.A. Quinn). A regular migrant at the Isles of Shoals; extreme dates there are 1 at White and Seavey Islands 24 Aug 1999 (D. Hayward) to 12+ at Star Island 14–18 Oct 1970 (R.S. Holt), high count being 40 at Star Island 30 Sep 2007 (E.A. Masterson *et al.*).

Winter. Lingering birds persist in December with some surviving through February, primarily at the coast but a few inland. In 1950–1980, wintering birds were reported in 23 of 31 winters; in 1990–2007 some were reported

every winter. The number of wintering birds also increased 1950–2009, possibly due to greater coverage and a warming climatic trend allowing greater survival. The CBC data illustrate this increase: the Coastal CBC averaged 1.2 in the 1950s and 5.1 in the 1980s. On 1990 CBCs statewide there were 6 birds, 5 on the coast and 1 in Nashua. Wintering numbers have increased since 1990 but have fluctuated; high counts statewide include 47 on 6 of the total of 21 CBCs 1994–1995, 25 of which were at the coast; 43 on 7 of the 21 CBCs 2000–2001 of which 22 birds were at the coast; 48 on 6 of the 21 CBCs 2009–2010 of which 30 were at the coast.

Taxonomic note. The western “Red-shafted” form *C. a. cafer*, formerly considered a separate species (AOU 1957), hybridizes in a wide zone in the midwestern United States with nominate *C. a. auratus*, the New Hampshire breeding form. Birds with a mix of field marks indicating hybridization have been found in the state 4 times: 1 at Center Barnstead 17 Apr 1967 (Hotchkiss 1967), 2 at Bedford 17 Dec 1994 (K. Metz), 1 at Keene 15 Dec 2001 on CBC (*fide* R.E. Ritz), and 2 at Keene 17 Dec 2005 on CBC (*fide* R.E. Ritz). Banding studies in MA have shown that hybrids occur occasionally in fall, but no unequivocal *C. a. cafer* has yet been found there (Veit and Petersen 1993).

Pileated Woodpecker *Dryocopus pileatus*

Status. Almost certainly common in colonial times, became uncommon to rare in most of the state by 1900, especially south of the White Mountains, but has increased in the southern and coastal regions in the last 60 years as reforestation has progressed and woodlands have matured. Now a moderately common but thinly distributed permanent resident.

Early reports to 1950. First reported by Belknap (1792) as “Great Red Crested Woodpecker, *Picus pileatus*.” Brewster found it still a common permanent resident in the Lake Umbagog region 1871–1909 though declining due to logging of old growth forests there at the time (Griscom 1938). Goodhue (1877a) thought it a rare resident at Webster, and Dearborn (1898) considered it very uncommon in Belknap and Merrimack Counties. Howe (1901–1903) believed it very rare in the Bridgewater region, having only 1 record at Ashland 6 Sep 1902. Spaulding (1898, 1910) found 3 nests near Lancaster in the summer of 1898 and again in 1909, Bolles (1890) found it on Mt. Chocorua 21 Aug 1889, while Clark (1899) found it on Mt. Washington. Dearborn (1903) called it rare in the Durham area, and Allen (1903) thought it “rather rare” in appropriate forest habitat up to 3000 feet elevation in the White Mountains, in forest on Mt. Monadnock (*fide* G.H. Thayer) and near Ossipee (*fide* E.A. Preble). Allen (1903) also found 3 near Walpole 9 Jul 1894, and Wright (1911) considered it a not uncommon resident in the Jef-

erson region. Marble (1907) thought it an uncommon resident at Crawford Notch. F. H. Allen described 2 birds “executing a sort of dance” on Mt. Monadnock 13 Oct 1908 (*fide* Bent 1939). After 1910, it began to be reported in the southern part of the state. Selleck (1916) noted 1 bird present all winter in Exeter 1915–1916, Danforth (1917a) found it nesting in eastern Jaffrey, and Hoyt (1963) mentioned that it increased in southern New Hampshire 1920–1959. At Concord White (1924b) thought it very rare and unrecorded since 1865, but later (1937) he reported that it began to be observed there in 1928, was seen occasionally in 1934–1935, and a nest was found in 1936.

There were few reports to RNEB in 1936–1949 but they include comments that it was seen regularly at Hanover and Ossipee 1937–1939, another nest was at Concord in 1939 (F.B. White), and it was found at 3 places in Andover in Sep 1944 (K.C. Elkins). Griscom (1938) reported that it had become more common in the Lake Umbagog region 1930–1936 (G.L. Perry) than it had been in Brewster’s time. May (1949) wrote that 1 broke into a cabin on Little Squam Lake in mid-Jun 1949.

1950 to present. In the 1950s it was reported from 35 towns and seen on 4 CBCs, mostly in the northern and central parts of the state. In the 1960s 69 different localities were mentioned covering the entire state and in every month. In the 1970s it was found in over 80 communities with increasing representation in the southeast and coastal regions. Continued gradual increase 1980s through 2009.

Summer and breeding. New Hampshire BBS population trend data show an average increase of about 3% per year in 1966–2009 and 1999–2009, in line with both regional and national increases (Appendix IV), probably a direct result of reforestation and forest maturation statewide. The *Atlas of Breeding Birds* project 1981–1986 found breeding evidence in 77% of the priority atlas blocks statewide but with the lowest density in Rockingham County (L. Kilham *in Foss* 1994). Since 1986, there have been more records in the coastal region: 2 in South Hampton 1 Jun 2004 (J.W. Berry), and 2 at South Hampton 5 Jul 2004 (R.W. and M. Suomala). The high known summer count is 13 at Errol 1 Jun 1997 (J.W. Berry, R.A. Quinn). Listed as increasing in hardwood and mixed forest since 1990 by Hunt (2009b).

Winter. CBCs also document recent increases: at Hanover it averaged 0.6 in the 1960s, 1.5 in the 1970s, 1.7 in the 1980s, 5 in the 1990s, and 9 in the 2000s. Total number recorded on CBC counts and the number of counts reporting them were 27 birds on 6 counts in 1990–1991, 58 on 15 counts in 1995–1996, 70 on 16 counts in 1997–1998, 65 on 14 counts in 2002–2003, 91 on 16 counts in 2005–2006, and 90 on 18 counts in 2009–2010.

ORDER PASSERIFORMES

FAMILY TYRANNIDAE

Olive-sided Flycatcher *Contopus cooperi*

Status. An uncommon spring migrant, an uncommon and local summer resident, primarily at higher elevations and more northern locations, and a rare fall migrant. Its numbers have declined in the 1900s. A species of Special Concern in New Hampshire.

Early reports to 1950. Coues (1868) and Maynard (1871) called it common near Lake Umbagog but Faxon and Allen (1888) and Porter (1903) thought it rare at Franconia. Brewster found it an abundant summer resident and breeder in the Lake Umbagog region 1871–1909 between extreme dates of 14 May 1881 and 5 Sep 1897. Goodhue (1877a, 1922) thought it a “not uncommon” migrant and an uncommon breeder at Webster. Brewster (1878) reported 1 shot at Rye Beach 24 Jul 1872, and the Dwight collection contained 1 taken at Campton Village 18 Jul 1885 (AMNH #370359). Dearborn (1898) described it as regular and fairly common as a migrant in Belknap and Merrimack Counties, and Howe (1901–1903) provided a record at Hebron in 1896, 1 at North Woodstock 13 Aug 1897, and sightings at Bridgewater in Jul and Aug 1900. Allen (1903) reported 4 males at Alstead in the summer of 1900 (R. Hoffmann), present at Hampton Falls in summer (W.E. Cram), and generally distributed in the mountains up to 2500 feet elevation and in the North Country. Dearborn (1903) described it only as a migrant near Durham in late May and early September, and (1905) as a scarce summer resident at Northfield. Marble (1907) felt it was a rare summer resident at Crawford Notch 1902–1907 with a late date of 27 Sep 1905. Thayer (1912) found it uncommon on Mt. Monadnock in deep woods, and Lord’s (1918) earliest arrival date was an exceptional 29 April at Hanover, though his 1912–1917 average was 13 May. Taber (1952) found it at 3600 feet at Hermit Lake on Mt. Washington 26 Jul 1931, the highest elevation known for it in the state. At Concord White (1924b, 1937) considered it an uncommon fall migrant that bred sparingly 1915–1930. Wright (1911) considered it a common summer resident in the Jefferson region, his latest fall record being 18 Sep 1900. One was found at the Isles of Shoals 28 Aug 1929 (Allan 1931), the exact island not stated.

Reports were submitted annually to RNEB 1936–1949, earliest in spring being 3 at Hanover 9 May 1941 (R.L. Weaver) though usual arrival was not until the second or third week of May and occasionally not until the last week of that month. Southbound birds were occasionally suspected as early as the first week of August, more usu-

ally by the last 2 weeks of that month. Latest known in fall was 1 at Monroe 19 Sep 1946 (I.F. Hunt).

In summary, this species probably was moderately common statewide prior to the 1750–1880 period of deforestation and must have declined as the original forests were cut and replaced by fields and pastures. In the last 3 decades of the 1800s it appears to have still been a common to abundant summer resident in most of the White Mountains and Coos County (which were still widely forested), and a widespread and perhaps locally common breeder in the western highlands, though a very scarce summer resident in the southeastern quadrant of the state and the coastal region at that time.

1950 to present. Moderate to significant decline in its breeding population as per Hunt (2009b).

Spring. Earliest known spring records are 1 unusually early at Waterville Valley 10 Apr 1955 (H.C. McDade *et al.*), next earliest being 1 at Concord 2 May 1976 (*fide* H.B. Miller), at Bedford 4 May 1962 (J.H. Kennard), and at Weare 4 May 2003 (P. Newbern). Mean first arrival date is 14 May. First arrival localities are equally divided between the Connecticut and Merrimack River valleys with few from the coast. First reports are sometimes from the northern part of the state at such localities as Jefferson, Monroe, Haverhill, Chatham, and Errol. Peak numbers in a day at 1 location are usually 1–3, exceptional counts being 5 at Pittsburg 18 May 1958 (M. Halberg *et al.*) and 10 at Wentworth’s Location 22 May 1975 (S. Robinson). Birds sometimes reach northern breeding areas early in migration; examples include 1 at Pittsburg 12 May 2000 (E.B. Nielsen) and 1 at Errol 14 May 1993 (C.J. Martin). Extreme late migrants cannot be distinguished with certainty from summer resident birds in the southern part of the state, but records from localities where they are thought not to breed include 1 at Andover “8 June only” 1972 (K.C. Elkins), Brentwood 5 Jun 1971 (BBS report), Portsmouth 5 Jun 1966 (E.W. Phinney *et al.*), and a “spring migrant” at Rye 2 Jun 1976 (J.E. Cavanagh).

Summer and breeding. While the great majority of birds breed in the mountains and northward, occasional pairs breed farther south in the western highlands and eastern uplands. Its presence in nontraditional breeding areas is illustrated by a pair in Rye Jun–Jul 1959 (K.C. Elkins) and 1 singing at Hopkinton 1 Jun to 2 Jul 1980 (R.A. Quinn). Peak known summer count is 44 at Pittsburg in mid-Jul 1959 (M. Halberg *et al.*). In late July and early August birds begin to roam and late nesters are feeding young. Some examples of this are 1 as far south as Weare 30 Jul 2004 (B. Griffith) and 2 adults with 3 juveniles at Barnstead 13 Aug 1985 (G.C. Robbins). The *Atlas of Breeding*

Birds project 1981–1986 found evidence of breeding in 46% of priority atlas blocks with the majority in the 3 northern counties (A.E. Robbins *in* Foss 1994). New Hampshire BBS population trend data show a significant decline averaging about 7% per year in both 1966–2009 and 1999–2009 in comparison to much smaller declines regionally and nationally (Appendix IV). In the Squam Lake region, Ridgely (1977) thought it thinly but widely distributed and found it nesting from 1500 to 3000 feet elevation, exceptionally as low as 800 feet up to 2006 (R.S. Ridgely pers. comm.). Allison and Allison (1979) found it only a rare summer resident in the Dublin area, and Cohn-Haft (1995) considered it a fairly common summer resident at the Second College Grant.

Fall. Southbound birds found at locations where they are thought not to breed appear in early August with peak numbers late August to early September. Suspected migrants are 6 at Sandwich 11 Aug 1979 (B.S. Ridgely), “2 migrating” at Rye 12 Aug 1968 (R.W. Smart), and 1 at Star Island 28 Aug 1955 (ASNH field trip). Mean last report date is 10 September. The great majority of last reports are from inland localities, especially from the Connecticut River valley from Pittsburg south to Walpole, and few are from the coast. Latest known fall records are 1 at Portsmouth 27 Sep 1974 (J.E. Cavanagh), 1 at Rye 5 Oct 1969 (W.R. Petersen), and at Hebron 18 Oct 1996 (P. and H. Curtiss).

Western Wood-Pewee *Contopus sordidulus*

Status. Vagrant. Hypothetical. One report. A single calling bird was seen and heard at Rye Harbor State Park 29 May 2011 (M. Resch); the report is considered hypothetical for lack of 2 other experienced observers or a photograph; its voice, which is believed to be species-specific, was compared to a recording while the bird was present. There are 2 spring sight records for MA in the May 23–28 period (Veit and Petersen 1993). This record was not accepted by the NHRBC because the bird was not observed singing while in view.

Eastern Wood-Pewee *Contopus virens*

Status. A common and widespread summer resident for over 200 years, especially in deciduous trees and open woods, generally more common south of the White Mountains. It is a fairly common spring and less common fall migrant but has declined since 2000.

Early reports to 1950. In the early 1800s, it was thought (Tyler 1942) to be generally more abundant than the Eastern Phoebe in New England. Despite the probability that its total New Hampshire population must have declined significantly during the deforestation period 1750–1880, it was still a rather common summer resident and breeder north to the White Mountains in the late

1800s. Coues (1868) and Maynard (1871) found it less common in the northern parts of the state, in the mountains and in Coos County than in the central Lakes Region and southward. In the Lake Umbagog region 1871–1909, Brewster considered it an uncommon summer resident in the remaining heavy conifer forest (Griscom 1938); it prefers deciduous trees or mixed growth, occasionally even large trees along village streets. The Dwight collection contained a specimen from Campton Village taken 27 Jul 1885 (AMNH #370184) and 1 from Hollis taken 11 Jul 1877 (AMNH #370185). South of the White Mountains, Goodhue (1877a) called it a common summer resident as did Howe (1901–1903) in the Bridgewater area. Dearborn (1898) thought it common in Belknap and Merrimack Counties and (1903) called it abundant in the Durham area and (1905) common at Northfield. Allen (1903) never found it above 2000 feet elevation in the White Mountains. Marble (1907) thought it a rare resident at Crawford Notch. Thayer (1912) thought it fairly common near Dublin, and Lord’s (1918) earliest spring arrival at Hanover was 15 May, his six-year average 1912–1917 being 23 May. In the Jefferson region Wright (1911) called it a common summer resident which often sang into September; his latest report was 3 Oct 1903. At Concord White (1924b, 1937) considered it a common summer resident.

Reports were submitted regularly to RNEB in 1936–1949. Earliest known in spring was 1 at Hanover 11 May 1943 (F. West) and usual first arrival was in the third week of May. Peak count in spring was 32 at Hanover in the 27–30 May period 1940 (L. Forsyth, E. Haskins). Southbound birds were regularly reported in the first 2 weeks of September, and latest reported in fall were 1 at New Hampton 26 Sep 1946 (V.H. Hebert) and 1 at Monroe 30 Sep 1949 (R.B. Emery).

1950 to present. Continues as a regular and locally common migrant and breeder; it usually arrives relatively late and leaves relatively early.

Spring. Earliest known arrivals include 1 at Littleton 26 Apr 1956 (H.C. McDade), at Concord 2 May 1956 (M.N. Dodge), at Exeter 3 May 1970 (M.G. Bouchard), and 6 in Windham 4 May 2002 (K. Folsom). Mean first arrival date is 14 May. First arrivals in 1950–1980 were slightly earlier with a mean date of 11 May than in 1981–2008 with a mean first arrival date of 16 May, probably indicating a modest decline in numbers. Localities where first arrivals have occurred are equally divided between the 2 major river valleys with only a few from the coast. About 20% of first arrivals were at northern localities such as Monroe, Lancaster, and Jefferson. General arrival is usually by 20 May and typical daily counts are 1–5. Peak counts tend to occur toward the end of May and in early June; examples include 16 in Nottingham 31 May 1999 (A. and B. Delorey), 13 in Lee 25 May 1965 (O. Earle *et al.*), and 17 at Nottingham both 5 Jun 1994 and 10 Jun

2000 (A. and B. Delorey), in all cases probably including local nesting birds on territory.

Late spring migrants are sometimes found at the Isles of Shoals well into June. Three reports from White and Seavey Islands include 5 May 2006 (D. and M. Hayward), 1 on 15 May 2005 (J.W. Berry), and 1 on 31 May 2003 (M. Barney *et al.*). There are 9 reports in June from the Isles of Shoals involving 13 birds, 8 of which were found 6–9 June, and latest was 1 at Star Island 26 Jun 1988 (L. Harper).

Summer and breeding. Examples of late breeding are 3 young at Keene 10 Jul 1959 (Robertson) and a possible second brood including “1 young still being fed” at Walpole 21 Sep 1951 (D.W. Brainard). The *Atlas of Breeding Birds* project 1981–1986 found evidence of nesting in 91% of priority atlas blocks with only 5 blocks missing south of the White Mountains, 4 of which were in the Western Highlands. Thus the species occurs throughout the state but is more common at lower elevations and from the White Mountains southward. Though regional BBS data suggested an increase in 1966–1989 and that its population was then denser than in adjacent states and provinces (J. McDermott *in* Foss 1994), New Hampshire BBS population trend data show a small decline averaging 1.5% in 1966–2009 and 1999–2009, and a regional decline had become even greater by 1999–2009 (Appendix IV). Ridgely (1977) called it a widespread and common breeder and migrant in the Squam Lake region, but it has declined since to uncommon or only locally fairly common in that area (R.S. Ridgely pers. comm.). Allison and Allison (1979) thought it a common summer resident near Dublin, and Cohn-Haft (1995) thought it fairly common at the Second College Grant. Listed as declining in hardwood and mixed forest by Hunt (2009b).

Fall. Suspected southbound birds are often detected in the first week of August, sometimes in family groups or congregating in small flocks: 6 at Concord 7 Aug 2004 (R.A. Woodward). Peak migration period is late August through September: 10 at Windham 27 Aug 2002 (M.G. Harvey), 37 gathered by a pond in New Hampton 11 Sep 1958 (R.C. and V.H. Hebert). Migrants were seen or banded on Star Island 28 Aug 1955 (ASNH field trip); on 29 Sep 1999; in 2000 on 20 Aug, 25 Sep, and 29 Sep (all R.W. Suomala); and 1 on 5 Oct 2007 (E.A. Masterson). Since 1950, 16 last reports for the year have been in October, 10 inland and 6 at the coast. The latest known coastal report was 1 at Rye 19 Oct 1961 (R.W. Smart, V.H. Hebert), the latest in the Connecticut River valley were 1 at Whitefield 3 Oct 2001 (R.A. Quinn) and at Hanover 6 Oct 1954 (E. Holyoke). The latest in the Merrimack River drainage were 1 seen singing at Concord 19 Oct 1962 (H.B. Miller), and 1 at New Hampton 21 Oct 1967 (R.W. Smart), this last being a partial albino which is now specimen #4164-B at UNH.

Yellow-bellied Flycatcher *Empidonax flaviventris*

Status. An uncommon migrant both spring and fall and fairly common summer resident in boggy spruce and fir forests in and north of the White Mountains, usually at elevations 2500–4500 feet and exceptionally as low as 1200 feet.

Early reports to 1950. Most early records come from probable or known breeding localities. Earliest known record is that of Maynard (1871), who called it common in Errol. Brewster thought it a common summer resident at Lake Umbagog 1871–1909 (Griscom 1938). Goodhue (1877a) and Dearborn (1898, 1903) both considered it a rare spring and fall migrant at Webster, in Belknap and Merrimack Counties, and near Durham respectively. Torrey (1884) found a nest in the White Mountains in Jun 1883, and a nest with 5 eggs was found in Lancaster 14 Jun 1886 (Spaulding 1887). It was also reported near Mt. Washington (Clark 1899) and it was considered a common summer resident in the White Mountains at elevations of 3000–4500 feet, occasionally lower (Chadbourne 1887, Allen 1903). However Marble (1907) considered it rare in Crawford Notch, apparently his only record being 1 caught by hand and examined on 10 Sep 1907. In the Jefferson region Wright (1911) considered it a “not uncommon summer resident in the higher forest covered slopes and also in damp woods about the ponds and wooded swamps;” his latest reports there were 7 Oct 1904 and 3 Oct 1905. Thayer (1904) found it breeding on Mt. Monadnock at 1400 feet elevation in the summers of 1902 and 1903, then the only known breeding locality south of the White Mountains, and in 1912 he called it an uncommon migrant at Dublin. White (1924b, 1937) considered it a rare transient at Concord, having only 1 spring and 1 fall record.

Regular reports were submitted to RNEB in 1936–1949. Earliest spring report was 1 at New Hampton 16 May 1946 (V.H. Hebert) and peak spring migration period was typically 23–31 May, though migrants regularly occurred into the second week of June. “Unusual numbers” were reported at Manchester in late May 1937 (E.J. Goellner). Southbound birds were found in areas south of the breeding grounds by the third week of August and latest records in fall were 19 Sep 1948 both at New Hampton (V.H. Hebert) and Andover (K.C. Elkins).

This species was probably more numerous in the state prior to the period of deforestation 1750–1880, especially in the southwestern highlands, but became uncommon in most of the state even as a migrant by the late 1800s except for the far north where some original forest remained. Populations appear to have recovered in the northern breeding areas by the 1930s and 1940s.

1950 to present. The breeding range for this species seems unchanged but numbers of breeding birds declined in the 1960s for unknown reasons, and spring first

arrival dates have been getting later since then. Breeding population in spruce-fir forest listed as uncertain by Hunt (2012).

Spring. Often a late migrant. Earliest arrivals have been at Hanover 28 Apr 1957 (L. Forsyth), Woodstock 28 Apr 1957 (H.C. McDade *et al.*), and 2 at Surry 4 May 2009 (L. Tanino). Most first reports have been found at northern locations near the Connecticut and Merrimack River valleys. Peak inland counts are in late May such as 4 at Concord 23 May 2004 (R.A. Woodward). Migration continues into June: examples include Nottingham 9 Jun 2001 (A. and B. Delorey), Hancock 12 Jun 2006 (E.A. Master-son), and Newbury 14 Jun 1995 (R.A. Quinn). Besides the inland flight there is a late migration at the Isles of Shoals and the immediate coast 25 May 2000 (R.W. Suomala) to 1 at Hampton 18 Jun 1998 (S.R. Mirick); there are at least 10 records 2000–2008 from Star Island and White and Seavey Islands in this period, usually of 1–3 birds but including a peak count of 18 banded at Star Island 25 May 2000 (R.W. Suomala).

Summer and breeding. There are summer reports from the Sandwich Range but most are from the White Mountains and Coos County. High summer counts include 64 at Pittsburg 7–9 Jun 1958 (R.C. and V.H. Hebert) and 91 males at Pittsburg 17–19 Jun 1961 (R.W. Smart and V.H. Hebert). In 1963, however, there was a marked decline from which it has not recovered. Recent high counts include 23 at Pittsburg 8 Jun 1996 (E.B. Nielsen), 20 at Jefferson Notch 15 Jun 1996 (BBS), and 12 at Beans Purchase (S.R. Mirick). New Hampshire BBS population trend data show a decline averaging about 3% per year in 1966–2009 and 1999–2009 (Appendix IV). These numbers contrast with the national BBS data which show “a significant increase of this species east of the Mississippi River” 1966–1979 (Robbins *et al.* 1986) and +2.7% per year nationally in 1999–2009 (Appendix IV). The *Atlas of Breeding Birds* project 1981–1986 showed evidence of breeding in 23% of the priority atlas blocks, nearly all from the White Mountains and northward (Foss 1994). High summer counts 2000–2008 range only from 14–22, usually from the mountains or Pittsburg. Found breeding at Church Pond Bog 2007–2009 at about 1200 feet elevation (R.S. Ridgely). South of the White Mountains breeding has been suspected at Lempster Bog (1000 foot elevation) in 1955, on Mt. Sunapee in 1953 and 1955, near Dublin in 1958 (T. Richards *in* Allison and Allison 1979), on Mt. Kearsarge in Merrimack County in 1953, 1954, 1972, and 1976 (E.C. Janeway *in* Foss 1994); also suspected there in 2009 (R.A. Quinn, J.W. Berry). Cohn-Haft (1995) reports it common in appropriate habitat at the Second College Grant. A singing male far south in Nottingham 21 Jun to 11 Jul 1998 (A. and B. Delorey) was unusual.

Fall. Southbound birds away from breeding areas have

been recorded at White Island 27 Jul 1999 (D. Hayward *et al.*), Sandwich 1 Aug 1996 (A.J. Vazzano), and Center Harbor as early as 5 Aug 1978 (J.P. Merrill); 11 were banded there 5 Aug to 18 Sep 1978 (J.P. Merrill). Typical fall high daily counts range 1–2 birds, very rarely 3. At the coast and Isles of Shoals, migration dates have been from 1 at White and Seavey Islands 1 Aug 2007 (D. and M. Hayward *et al.*) to 26 Sep 1974 at Rye (J.E. Cavanagh). Late inland dates are 1 at Londonderry 28 Sept 1975 (D.M. MacRae), 1 at Lebanon 29 Sept 1991 (P.D. Hunt *et al.*), at Charlestown 30 Sep 1969 (W.W. and G.L. Kidder), and at Chester 3 Oct 1998 (A. and B. Delorey).

Acadian Flycatcher *Empidonax virescens*

Status. The breeding range of this southern species has been shifting slowly northward in the last 30 years. It has become a rare summer visitor and possibly a very rare nesting species in southern New Hampshire, though never documented to have successfully nested to date. It has also occurred as a spring migrant on Star Island. It was first recorded in Connecticut in 1874 (Sage *et al.* 1913); it nested in MA in 1888 but was not found there again until the 1960s and was nesting in the southeastern part of MA by the 1980s (Veit and Petersen 1993).

1950 to present. The first probable record for New Hampshire was a bird banded (#1260-74419) and photographed at Center Harbor 16 Aug 1976 (J.P. Merrill); its measurements were suggestive, but at the time the record was considered hypothetical because no state specimen existed and the photographs were considered inconclusive. There were several birds both heard and seen 1977–1986: 1 singing at New London on 15 Jun 1977 (*fide* K.C. Elkins *et al.*), 1 at Bennington 29 May 1978 (H.M. Cadot), 1 at Conway 14 Jun 1979 (A.H. and R.C. Vernon), 1 seen and heard at Littleton several times between 25 May and 24 Jun 1980 (R.J. Bradley, C. Miles), 1 singing on territory at New Boston from 31 May to 10 Jul 1982 (R. Andrews), 1 there again 9 Jun 1983 (R. Andrews), and a singing male at Strafford in May 1986 (S. Williamson). The first documented nesting record was at Sandwich 10 Jul 1986 (C.R. Foss, B.S. and R.S. Ridgely). They found 3 eggs in a nest above a stream that ran between Lower and Middle Hall Ponds; the nest with eggs and the bird present were photographed 18 Jul (T. Richards). On 22 Aug the nest was collected and deposited at UNH by B.S. Ridgely; only a female was present and the eggs were infertile. The *Atlas of Breeding Birds* project 1981–1986 recorded this nesting and another probable one near New Boston in 1982 (R. Andrews *in* Foss 1994).

Records increased in frequency 1991–2006. One was found at Pawtuckaway State Park in Nottingham 7 Jul 1991 (S.R. Mirick) and a pair built a nest there but the nesting failed. One was heard in Auburn 14 May 1995 (R. Andrews), and another was heard in Lyndeborough 18

Jun 1995 (W.M. Goodwill). At Pawtuckaway State Park a pair and the second known nest were found 31 May to 13 Jul 1998 (S.R. Mirick, R.P. Fox *et al.*). Other records there were 17 May to 5 Jul 1999 (R.P. Fox, A. and B. Delorey), 12 May to 4 Jul 2000 (A. and B. Delorey), 4–13 Jul 2002 (A. and B. Delorey), 31 May 2003 (A. and B. Delorey), and 7 Jun 2003 (R.A. Woodward *et al.*). Migrants were found at South Hampton 27 May 2000 (S.R. Mirick), 3 were banded at Star Island 31 May to 5 Jun 2000 (R.W. Suomala *et al.*), 1 at Weare 17 May 2002 (A. and B. Delorey), 1 at South Hampton 28 Jun 2003 (J.W. Berry), 1 at Windham 5 Jun 2004 (M.G. Harvey), 1 at Mont Vernon 20–22 Jun 2004 (F. VonMertens), and 1 at Durham 19 May 2006 (M.G. Harvey).

In summary, this species has become a very scarce but probably increasing seasonal migrant since 1976 in the state, now the northern extremity of its range in New England. Latest known summer record is 18 July; records could occur into late August but would have to be supported by measurements to be accepted. A report in the Isles of Shoals on the improbable date of 10 Nov 1929 on an unspecified island (Allan 1931) is probably an error for some other species. The advance of the Hemlock Woolly Adelgid insect *Adelges tsugae* into the southern New England states has the potential to damage the preferred breeding habitat of Acadian Flycatchers in New Hampshire as it has in the Appalachian highlands (Allen *et al.* 2009).

Alder Flycatcher *Empidonax alnorum*

Status. A fairly common spring migrant and a common summer resident. Because fall *Empidonax* flycatchers are very difficult to identify with certainty, this species can seldom be reported with confidence after August.

Early reports to 1950. This species and Willow Flycatcher were considered conspecific until 1973 (AOU 1983) under the latter's specific epithet *traillii*. Therefore, all early reports could apply to either of the 2 species, and there is now no way to surely separate their records. However, for our purposes here we will treat all pre-1950 reports as pertaining to Alder Flycatcher because it is the more northerly-distributed of the 2 species and since the habitat of most of New Hampshire has been historically of the type usually now associated with Alder Flycatcher. Brewster found it a locally abundant summer resident in the Lake Umbagog region 1871–1909 (Griscom 1938), but Goodhue (1877a) thought it uncommon in summer at Webster, though Dearborn (1898) considered it a regular summer resident in Belknap and Merrimack Counties. Interestingly, there were no specimens in the Dwight collection from Hollis 1875–1887. Howe (1901–1903) had only 2 records for the Bridgewater area, single birds seen in the summers of 1900 and 1901 (G.M. Allen). Torrey (1900) found the first migrant at Franconia on 23

May and it was abundant there by 26 May. Allen (1903) reported it rare near Alstead (*fide* R. Hoffmann) and found a nest at Intervale 21 Jun 1899; he thought it locally common in the White Mountains and northward. Dearborn (1903) thought it common in suitable habitat near Durham (though these actually could have been Willow Flycatchers), and Marble (1907) considered it an uncommon summer resident at Crawford Notch. Thayer (1912) called it locally common near Dublin. In the Jefferson region Wright (1911) found it an abundant summer resident along the Israel River and its tributaries with alder growth; he recorded nearly 50 on 9 Jun 1910 on a drive to Lancaster; his latest reports were at Randolph 14 Sep 1910 and 1 near Cherry Pond 15 Sep 1910. Lord's (1918) earliest spring arrival date at Hanover was 14 May and his 1912–1917 average was 19 May. At Concord, White (1937) had only 2 spring reports: 29 May 1930 and 5 Jun 1932.

Only a modest number of reports were submitted to RNEB in 1936–1949. Earliest in spring were 12 May 1946 at New Hampton (V.H. Hebert) and 14 migrants found 12–19 May 1940 at Hanover (A. McAlister *et al.*). Most spring migrants were reported 18–29 May. Birds were recorded in July at Fitzwilliam (W. Taber) and Hanover (E. Haskins). Fall migrants were found 2–13 September. In summary, this species was probably widespread and common in suitable habitat in the state 1750 to the late 1800s and remained so into the 1940s in the White Mountains and northward, particularly in the Connecticut River drainage; it was uncommon to rare as a migrant or summer resident in the central and lower Merrimack River valley at Hollis, Concord, and Webster.

1950 to present. A fairly common and slowly increasing summer resident, especially in Coos County; unless vocalizing, it is essentially impossible to identify with certainty after mid-August when migrating south. Population trend listed as increasing by Hunt (2012).

Spring. The earliest known spring arrivals are 1 at Monroe 10 May 1955 (R.B. Emery), at Littleton 10 May 1967 (K. McDade), and 1 at Pittsburg 11 May 2000 (E.B. Nielsen). Mean first arrival is 19 May. About 50% of the first reports are from the Merrimack River valley, about 35% are from the Connecticut River valley, and about 15% are from the coastal area. The great majority of first reports are from the southern third of the state with but a few from breeding territories north of the White Mountains. General arrival is typically by 22 May. Daily counts are usually 1–5 during migration but peak counts can be higher when migrants and breeding birds are together: 8 at Concord 23 May 2004 (R.A. Woodward) and 13 at Concord 2 Jun 2007 (R.A. Woodward). Late migrants are often found in the coastal region: 2 on Star Island 1 Jun 2008 (E.A. Masterson), 5 there 7 Jun 1999 (R.W. Suomala), and 1 at White and Seavey Islands 18 Jun 2004 (M. Barney).

Summer and breeding. Typical habitat is in alder swales, along meadow brooks or about swamps, especially up to 1500 feet elevation in alder-filled valleys in the White Mountains and in Coos County. Peak counts are of singing males 5–18 June in the north country: 33 at Littleton 8 Jun 1990 (R.J. Bradley), 23 in Pittsburg 10 Jun 1994 (A. and B. Delorey), 18 on Indian Stream Road in Pittsburg 18 Jun 2006 (E.B. Nielsen), and 10 at Sandwich 5 Jun 1999 (A.J. Vazzano). The *Atlas of Breeding Birds* project 1981–1986 documented possible to confirmed breeding in 112 priority atlas blocks (63% of total priority blocks), the greatest density of confirmed and probable breeding being in Coos County; also reported in a majority of priority blocks in all other counties except Cheshire in the southwest corner of the state and Rockingham in the southeastern coast area (J.W. Berry *in* Foss 1994). New Hampshire BBS population trend data show an increase of 1.9% per year in both 1966–2009 and 1999–2009 (Appendix IV). There may be some competition from the congeneric Willow Flycatcher, especially in the southern third of the state, as a cyclical climatic warming trend continues, bogs and swamps are drained, and the human population increases there. However both flycatcher species can be found in adjacent territories if the habitat is sufficiently varied.

Fall. Most birds tend to leave breeding territories shortly after nesting but some remain and may sing. Southbound birds are detected by the first week of August and mean date for the last reports is 26 August with stragglers being found into late September. A migrant was banded on Star Island 17 Aug 2000 (R.W. Suomala) yet 4 were singing in Jefferson 10 Aug 1974 (M.L. Fuller) and 2 were singing in Jefferson 23 Aug 1980 (R.J. Bradley). The latest known fall reports are 1 singing at Monroe 11 Sep 1968 (R.B. Emery), 1 banded at Bedford 16 Sep 1980 (J.J. Barry), 1 at East Kingston 22 Sep 1977 (D.W. Finch), and 1 banded in Rye 29 Sep 1970 (J.W. Barry).

Willow Flycatcher *Empidonax traillii*

Status. An uncommon but increasing summer resident, primarily in the southern part of the state, expanding in numbers and range in suitable habitats. As noted above under Alder Flycatcher, this species was not formally recognized until 1973 (AOU 1983). The issue of whether this species has been in New Hampshire all along or is a relatively recent invader has never been satisfactorily settled, though recent opinion has tended to favor the latter hypothesis (Harrison 1975, Sorrie 1975a, Laughlin and Kibbe 1985). Its range has been contracting in the western part of the United States and increasing in the east, perhaps replacing Alder Flycatcher in some areas. If this hypothesis is correct, Willow Flycatcher may have been very rare or even absent prior to 1900 in New Hampshire. In fact, there are no pre-1960 records for the state. Since

separation of the 2 species in spring is almost exclusively by voice and since song is very seldom heard on migration, most published pre-1973 reports were just lumped as “Traill’s Flycatcher,” especially in fall.

1950 to present. There were 4 records of singing Willow Flycatchers 1961–1972 where the distinctive song was noted, but these records were buried in the “Traill’s Flycatcher” reports. All 4 records were summer observations: New Hampton 1961 (R.C. and V.H. Hebert), Andover 1962 (K.C. Elkins), Strafford 1971 (M.G. Bouchard), and Nashua 1972 (M.G. Bouchard). Seasonal information for this species began to be reported 1975 forward. Notable increase since 1950.

Spring. The earliest known spring arrivals are 1 at Rye 4 May 1983 (E.W. Phinney), at Weare 5 May 2002 (P. Newbern), and at Walpole 8 May 2008 (A. Johnson). Mean first arrival is 17 May. Most first arrivals are found in the southern part of the state, often near breeding locations; 1 northerly first report was at Lebanon 21 May 1994 (P.D. Hunt). During migration daily counts usually range 1–3; peaks are 11 at Dover 17 May 2004 and 20 there 31 May 2004 (both G.W. Gavutis, Jr.), probably including local nesting birds in both cases. Late migrants were 2 on Star Island 1 Jun 2008 (E.A. Masterson), and a straggler was 1 there 24 Jun 1993 (A. and B. Delorey).

Summer and breeding. High summer counts are of singing birds in likely breeding habitats: 7 at Kensington 24 May 1997 (J.W. Berry), 18 at Hinsdale 20 Jul 2004 (M.G. Harvey), 20 in Dover 31 May 2004 (G.W. Gavutis, Jr.), and 20 at Dover 3 Jun 2003 (M. Suomala). During the *Atlas of Breeding Birds* project 1981–1986, the only actual nest with eggs was found at Seabrook 15 Jun 1985 (J.W. Berry), but confirmed breeding was reported in 5 priority atlas blocks and probable breeding was reported in 11 blocks, all but 1 in the southeastern quadrant of the state (J.W. Berry *in* Foss 1994). New Hampshire BBS population trend data show a significant increase averaging about 5% per year in 1966–2009 and 1999–2009 (Appendix IV). Among the first reports north of the White Mountains are 1 at Whitefield in summer of 1983 (R.J. Bradley), 2 in Jefferson 19 Aug 1989 (R.J. Bradley), at Bethlehem 5 Jun 1992 (S.B. Turner), at 2 areas in Whitefield 6 May 1992 (G. Ports) and 30 Jun 1992 (R. Frechette *et al.*), and 4 in Whitefield 18 Jun 1997 (R.A. Quinn). Farther up the Connecticut River Valley birds were found at Lancaster 1 Jul 1997 (P.D. Hunt), then Pittsburg 24 Jun 2005 (E.B. Nielsen), and at Berlin in the Androscoggin River valley 18 Jun 2006 (I.C. MacLeod). Breeding population listed as increasing since about 1990 (Hunt 2009b).

Fall. Since the species is best identified by song and song stops in late summer there are few definite fall reports. These range from 8–25 August and by location from Concord to Exeter with the last report at Newbury 25

Aug 1996 (P. Newbern). An *Empidonax* flycatcher that may belong here was at Star Island 22 Oct 2011 (E.A. Masterson, G. Tillman *et al.*).

Least Flycatcher *Empidonax minimus*

Status. An uncommon migrant and summer resident below 2000 feet elevation in hardwood and mixed forest and woodland edges; breeding population listed as declining by Hunt (2009b).

Early reports to 1950. It was considered a common migrant and summer resident throughout the state 1850–1900 when orchards and forest edge habitat were common; it was absent from deep forest and above 1700 feet elevation. Brewster thought it a locally common summer resident in the Lake Umbagog region 1871–1909 (Griscom 1938), and Goodhue (1877a) called it very common at Webster in summer. The Dwight collection contained 4 specimens taken at Hollis 10 May to 27 Jul 1875–1886 (AMNH #369875–369878). Dearborn (1898, 1903) described it as common in Belknap and Merrimack Counties and in the Durham region, especially around Apple orchards. Howe (1901–1903) called it common in the Bridgewater area, Herrick (1902) thought it an early summer nester at Tilton in 1901, and Abbott (1906) found it in Concord 1 May 1905. In contrast to other early writers, Marble (1907) had only a single report from Crawford Notch on 9 Jul 1906, while Thayer (1912) thought it very common in the Dublin area. In the Jefferson region Wright (1911) considered it a common summer resident of deciduous woods up to 1700 feet, usually leaving 18–23 September; his latest record there was on 3 Oct 1905. Lord's (1918) earliest spring arrival at Hanover was 2 May and his average 1912–1917 was 11 May. At Concord, White (1924b, 1937) called it a very common migrant and summer resident, arriving as early as 27 April with average arrival date 1921–1936 of 3 May. As reforestation occurred 1900–1950 accompanied by suburbanization, the amount of its favored orchard habitat declined and it appears to have shifted to more dense growth beside streams, ponds, and roadsides as well as field edges (White 1937).

Reports submitted to RNEB 1936–1949 show it to be a common spring migrant, earliest report being 26 Apr 1941 at Hanover (C.A. Reynolds) and usual first arrival in the first 2 weeks of May. Southbound birds were found by the second week of August, and peak fall migration period was the first 2 weeks of September. Latest records in fall were 1 at Andover 24 Sep 1948 (K.C. Elkins) and a very late straggler was at North Stratford 13 Oct 1939 (E.P. Johnson).

1950 to present. Now uncommon, it has declined markedly in this period.

Spring. Earliest known spring arrivals are 1 at Surry 16 Apr 1982 (J.H. Ward), Goffstown 26 Apr 1985 (H.W. Parker), and Weare 27 Apr 2003 (P. Newbern). Mean first arrival date is 1 May, and a high percentage of first reports are in the Merrimack River valley. Peak spring migration period is the second 2 weeks of May. Peak spring counts include 33 at Pawtuckaway State Park in Nottingham 4 May 1995 (A. Delorey), 37 at Pittsburg 17 May 2000 (E.B. Nielsen), 40 at Pawtuckaway State Park 18 May 1996 (D. and A. Strong), and 50+ in the Dummer–Cambridge area 21 May 1972 (V.H. Hebert). These 4 records probably include primarily local nesting birds as well as migrants. Recent single-day counts have rarely exceeded 10. Late spring migrant dates are 1 at White and Seavey Islands 8 Jun 2003 (J. Derrick) and 15 and 17 Jun 1998 (J. Ellis, D. Hayward).

Summer and breeding. Despite fluctuations, there was a marked decrease statewide in the 1950s and a further decrease in the 1960s and 1970s (Holmes *et al.* 1986). New Hampshire BBS population trend data show a significant decline approaching an average of 5% per year in 1966–2009 and 1999–2009, greater rates than have been reported regionally or nationally (Appendix IV). A similar decrease was noted in MA (Veit and Petersen, 1993). The *Atlas of Breeding Birds* project 1981–1986 reported evidence of breeding in 91% of all priority atlas blocks with the few missing blocks widely scattered but primarily in higher elevations and heavily forested areas (R.T. Holmes and T.W. Sherry *in Foss* 1994). Some authors have hypothesized that its decline may be related to the loss of orchards and farmland and the increase in urbanization and the maturation of forests; others have suggested that loss of good wintering habitat may be part of the explanation. Breckenridge (1956) and Sherry (1979) both point out that it now seems most abundant in forest, “particularly 25 to 60 year old hardwoods with closed overstory and relatively open subcanopy” (Foss 1994), possibly its principal habitat before human settlement. Cohn-Haft (1995) described it as a fairly common summer resident at the Second College Grant.

Fall. A possible postbreeding wanderer or late spring migrant that just lingered was at White and Seavey Islands 1 Jul 1999 (D. Hayward, D. Trested). Otherwise, southbound birds are thought to occur early to mid-August: 2 at White and Seavey Islands 12 Sep 2001 (D. Hayward *et al.*). Primary migration period is believed to be 29 August to 21 September. Latest records either banded and measured or identified by experienced observers include 1 banded on Star Island 30 Sept 2000 (R.W. Suomala), 1 at Amherst 3 Oct 1998 (R.W. Suomala), 1 at Londonderry 4 Oct 1966 (H.A. Reynolds), 1 at Star Island 7 Oct 1973 (D.W. Finch), 1 at Andover 8 Oct 1973 (K.C. Elkins), and a very late record at East Kingston 26 Oct 1975 (D.W. Finch).

Eastern Phoebe *Sayornis phoebe*

Status. A common migrant and breeding species April through October throughout the state except for the higher mountains where it is less common. Frequently nests around buildings.

Early reports to 1950. The “Brown Flycatcher, *Muscicapa fusca*,” of Belknap (1792) surely belongs here, though before the deforestation period 1750–1880 it was probably much less common than it became after large areas of land were cleared and many buildings suitable for nesting were built. It was considered common in much of the state by the mid-1800s (Coues 1868, Allen 1903), Goodhue (1877a) thought it common in summer at Webster, and Dearborn (1898) called it abundant in Belknap and Merrimack Counties. However, Brewster thought it only a rare summer resident in the Lake Umbagog region 1871–1909 in undisturbed forest though fairly common in more settled areas near Colebrook; his latest in fall at the lake was 11 Oct 1888. The Dwight collection contained 3 specimens taken at Hollis 1 Apr to 18 Aug 1875–1886 (AMNH #369520–369522). Parker (1876) found it in Farmington 8 Apr 1876, and it was nesting in an old Bank Swallow nest 22 May 1892 (Farmer 1892d). Shelley (1935g) reported the first banding record of any species for the state: “D. Scoville put a wire on the leg of a presumed female Phoebe at night in Westmoreland in 1892 or 1893 and it returned the next year.”

Howe (1901–1903) thought it abundant in summer near Bridgewater, and Dearborn (1903) considered it abundant near Durham, but Marble (1907) called it a scarce and irregular summer resident at 1800 feet elevation at Crawford Notch. Thayer (1912) considered it common at Dublin, 1 was at Grafton 16 Apr 1914 (Hinds 1914), and Fabens (1919) reported a pair nesting at Georges Mills. Forbush (1927) noted 1 at Milford 13 Feb 1919, the first known winter record. In the Jefferson region, Wright (1911) considered it a “rather common resident nesting up to 1600 feet” elevation; his earliest spring record was 3 Apr 1910 (F.B. Spaulding), and his latest in fall was 2 Oct 1902. Shelley (1935g) reported that 1 he banded 11 Jun 1931 returned at least through 1935 and raised 28 young at East Westmoreland in those 5 years. At Hanover, Lord’s (1918) earliest spring arrival date was 23 March and his average 1912–1917 was 31 March. At Concord White (1924b, 1937) called it abundant and his latest record in fall was 21 Oct 1924. At Lake Umbagog it had become common by 1930–1936 (G.L. Perry) following much logging in the area since Brewster’s time (Griscom 1938).

This species was commonly reported to RNEB 1936–1949. Earliest spring arrival was 20 Mar 1946 at Monroe (J.I. Beattie), and usual first arrival was in the last week of March or the first few days of April. Peak spring count was 50 at Hanover 1 May 1940 (R.L. Weaver). Fall migra-

tion began in September and birds were present routinely into the second week of October; peak fall count was 6 at Hanover 15 Oct 1941 (L. Forsyth), and latest reported was 1 at New Hampton 31 Oct 1947 (V.H. Hebert).

1950 to present. Still common and widespread though in slightly lower numbers since 1950 as open fields and farmland have become reforested. Later reports in fall and occasional records in winter are probably attributable to the cyclical climatic warming that has occurred since 1950 and, especially, to an increased number of active field observers. Population trend listed as decreasing by Hunt (2012).

Spring. Extreme early spring arrivals are 1 at Rye 3 Mar 1988 (M.J. Murray) and 1 at Moultonborough 4 Mar 1980 (I.A. Behr). An early migrant, general arrival date averages 31 March. Typical spring peak single-location counts are 12–16. The highest known counts are 60 in Londonderry 19 Apr 1992 (H. Chary), 20 in Laconia 12 Apr 1992 (H.C. Anderson), 80 by canoe along the Merrimack River between Boscawen and Penacook 12 Apr 1992 (R.A. Quinn, T. Richards), and 95 in Lee 11 Apr 1965 (R.C. and V.H. Hebert).

Summer and breeding. Early and late known breeding reports include East Kingston 14–20 Apr 1977 (D.W. Finch) and a “nest with young” to 5 August (E.C. Janeway in Foss 1994). The elevation record for the state is 1 at 3600 feet in the White Mountains in summer 1994 (*fide* R.A. Quinn). National BBS data show that from 1966–1979 the highest densities of this species in North America were in New Hampshire and VT (Robbins *et al.* 1986). However, New Hampshire BBS population trend data show a small decline of 0.4% per year 1966–2009 but a sharper 3.5% decline per year 1999–2009 (Appendix IV). A very severe 1976–1977 winter in the northern part of the species’ wintering range is thought to have caused a 1976–1985 decline which was recorded in much of eastern North America. The *Atlas of Breeding Birds* project 1981–1986 documented evidence of breeding in 88% of the priority atlas blocks; the few missing blocks were in the White Mountains and along the ME border in Coos County (Foss *op. cit.*). Cohn-Haft (1995) found it rare, local, and always near man-made structures at the Second College Grant.

Fall. While probable early migrants were at White and Seavey Islands 23 Jul 1999 and 31 Jul 2001 (both D. Hayward *et al.*), evidence of fall migration is often reported by early August and most migration occurs 4 September through October. Peak counts tend to be in September: 23 at New Hampton 2 Sep 1965 (V.H. Hebert), 20 at Lee 8 Sep 1965 (O. Earle *et al.*), 20 at the coast 26 Sep 1965 (R.W. Smart), 17 at Northfield 9 Sep 2001 (P.D. Hunt), and 21 at Newington 24 Sep 1995 (M. and R.W. Suomalainen). Late reports of non-straggler migrants after mid-November include 1 at Greenland 19 Nov 1973 (R.M.

Gamester), at North Chichester 24 Nov 1969 (M. Smith), at Exeter 26 Nov 1965 (D. W. Finch), and Durham 30 Nov 1991 (S. R. Mirick).

Winter. Stragglers have remained occasionally until the CBC period, more regularly since 2000. Examples include CBCs at the coast 29 Dec 1962, at Lee in 1988, at Nashua 29 Dec 1990, in the Baker Valley 18 Dec 1993, at the coast in 2004, at Nashua in 2005, and at Lee in 1988 and 2006. Winter inland non-CBC reports include Hanover 5 Dec 2002 (R. A. Humphries), Wentworth 20 Dec 1993 (G. Ports), 1 at Merrimack 5 Feb 2007 (L. Medlock), and 1 that overwintered in Rochester 4 Dec 2001–16 Feb 2002 (S. R. Mirick, D. J. Abbott).

Say's Phoebe *Sayornis saya*

Status. Vagrant from the west; one record. One first discovered in the Penacook area of Concord 17 Nov 2012 (C. K. Borg et mult.; photographed) was last seen on 23 November. Two accepted records (Nov 1994 and Nov 1995) and one hypothetical record (Nov 1986) for VT (C. C. Rimmer, pers. comm.), 18 accepted records for MA by 1993 almost all in September and October (Veit & Petersen 1993, p. 302) and virtually annual since; and 10+ records for ME mostly in September and October (ME BRC website; P. D. Vickery pers. comm.).

Ash-throated Flycatcher *Myiarchus cinerascens*

Status. A fall vagrant from the west; 4 records since 1998.

Reports. The first state record was 1 at Lyme from late Nov to 6 Dec 1998 (H. Swartz *et al.*); there were 2 in MA and 1 in ME about the same time that year. The second record was at Concord 26–28 Oct 2001 (M. Suomala, R. A. Quinn *et al.*). The last 2 records were near the coast: East Kingston 19 Nov to 1 Dec 2005 (D. W. Finch *et al.*) and at Kensington 20 Nov 2005 (D. W. Finch). A total of at least 20 records for MA (Veit and Petersen 1993, BO database 2010); over 8 records for ME (ME-BRC website, P. D. Vickery pers. comm.).

A *Myiarchus* flycatcher of undetermined species at Rochester 13 Nov 2008 (D. Hubbard) was likely this species.

Great Crested Flycatcher *Myiarchus crinitus*

Status. Uncommon south of the White Mountains and irregular north of there in the 1800s but has become more common in the last hundred years. Now a fairly common spring migrant and summer breeder and an uncommon fall migrant with breeding population numbers in hardwood and mixed forest stable in recent decades (Hunt 2009b).

Early reports to 1950. The “Crested Fly-Catcher, *Muscicapa crinita*,” of Belknap (1792) certainly belongs here.

Maynard (1871) thought a few straggled north into the southern part of the state, and Goodhue (1877a, 1922) considered it uncommon at Webster. Hawes (1877) considered it irregular and a rare summer resident at North Conway; he did find a nest at Echo Lake. Brewster only found it twice at Lake Umbagog 1871–1875 but it became reasonably common there 1876–1909 (Griscom 1938), confirming the report of Stearns and Coues (1883) that it first appeared there in 1872. It was present in small numbers there (G. L. Perry) by 1930–1936 (Griscom 1938). The Dwight collection contained 1 specimen taken at Campton Village 19 Aug 1885 (AMNH #369333). Dearborn (1898) called it locally common in Belknap and Merrimack Counties and (1903) thought it an uncommon but regular migrant in the Durham region, nesting sparingly. Howe (1901–1903) found it occasionally near Bridgewater in summer, but Marble (1907) never found it at Crawford Notch at 1800 feet elevation. Allen (1903) considered it an uncommon summer resident but only up to 1500 feet in the White Mountains. Thayer (1912) considered it very rare in the Dublin region, and Wright (1911) said it was “an uncommon summer resident, a few pairs each season breeding” in the Jefferson region. Lord’s (1918) earliest spring arrival at Hanover was 6 May and his 1912–1917 average was 16 May. White (1924b) considered it only a migrant at Concord but later (1937) he noted that it had begun to breed and occur more often there as a migrant; his earliest seen in spring was 11 May 1927 and latest in fall was 11 Sep 1902.

It was reported regularly to RNEB 1936–1949, especially in spring but seldom in fall. Earliest recorded arrival was 4 May 1944 at New Hampton (V. H. Hebert); general arrival was 7–18 May. Presumed southbound birds were noted in the second week of August, and latest record in fall was 1 at New Hampton 15 Sep 1945 (V. H. Hebert). Bent (1942) thought it primarily a forest dweller which adapted during the deforestation period 1750–1880 to living in more open situations such as woods edges, old orchards, and even about human habitations.

1950 to present. Moderately common and very slightly increased in this period.

Spring. Earliest spring arrival date is 1 at Newbury 23 Apr 2001 (P. Newbern), with general arrival 7–17 May. Migrants are reported through the end of May. Extreme late spring migration dates are 1 at White and Seavey Islands 16 Jun 2000 (D. Hayward *et al.*), 18 Jun 1998 (J. Ellis *et al.*), and 25 Jun 1997 (A. Cook *et al.*). Typical single-locality reports in a day are 1–3 birds; high count was 7 at Nottingham 11 May 1996 (A. Delorey), probably all birds on territory.

Summer and breeding. New Hampshire BBS population trend data show virtually no change 1966–2009 or 1999–2009 (Appendix IV). The *Atlas of Breeding Birds* project

1981–1986 found evidence of breeding in 84% of the priority atlas blocks including all but 3 blocks south of the White Mountains. This species seldom nests above 1500 feet elevation so it has been found only sparingly north of the White Mountains, though it was confirmed breeding at Pittsburg in the northern Connecticut River valley in 1951. Ridgely (1977) considered it uncommon and local near Squam Lake, Allison and Allison (1979) called it uncommon near Dublin in summer, and Cohn-Haft (1995) said it is rare at the Second College Grant. Two were found virtually on the Canadian border in Pittsburg 11 Jun 1999 (E.B. Nielsen).

Fall. Extreme early southbound migration has been suspected by mid- to late July; birds found where they were thought not to have bred include single birds at Hampton 15 Jul 1969 (R.W. Smart) and Bow 23 Jul 1967 (M.N. Dodge), but the usual migration dates are 27 August to 19 September. There have been 8 very late dates where the possibility of vagrant western *Myiarchus* species has been satisfactorily ruled out: Hanover 28 Sept 1958 (H.C. McDade), New Hampton 1 Oct 1968 (V.H. Hebert), Jackson 2 Oct 1968 (F. Yates), Newbury 5 Oct 1997 (P. Newbern), Rye 29 Sep and 15 Nov 1970 (D.J. Abbott, L.G. Phinney), Dunbarton 25 Nov 1960 (J.B. Grant) and Concord 1 Dec 1969 (E.T. Densmore). In MA from 15 November to 21 December there have been 10 *Myiarchus* flycatchers that were not specifically identified, but 3 seen there 17 November to 15 December were believed to be this species (Veit and Petersen 1993).

Tropical Kingbird or Couch's Kingbird *Tyrannus melancholicus* or *Tyrannus couchii*

Status. Vagrant from the western or southwestern states. One seen well at Claremont 2 Nov 2003 (W. and S. McCumber, A. Beals, R. Welsh, K. Andrews *et al.*) until observed being carried off by a Sharp-shinned Hawk! These 2 flycatcher species are indistinguishable in the field unless heard calling, and this bird did not call. See McCumber (2003) for details of the sighting and 4 other reports 1992–2001 that were either 1 or the other of these 2 species, 1 from Nova Scotia and 3 from MA. One accepted record of Tropical Kingbird from ME (ME-BRC website) and 1 from MA in 2000 (BO database 2010). One accepted record for Couch's Kingbird in MA in 2001 (BO database 2010).

Western Kingbird *Tyrannus verticalis*

Status. A very uncommon visitor from the west. Very rare in spring, occasional in fall. Like some other western vagrants, this species may occur somewhat regularly for several years in a row and then not be found for another period of years.

Early reports to 1950. The first 2 state reports were both

from New Hampton: 19 Sep 1947 (V.H. Hebert) and 26 Oct to 2 Nov 1950 (J.B. Merrill *et al.*).

1950 to present. There were 46 reports 1952–2009: 11 in 1952–1965 (0.79/yr), 13 in 1966–1975 (1.3/yr), and 22 in 1976–2009 (0.66/yr). Similar numbers of reports 1952–1975 occurred in MA and other northeastern states; the pattern of declining numbers of records after 1975 also occurred elsewhere in southern New England (Veit and Petersen 1993); there is only 1 accepted record for VT (C.C. Rimmer pers. comm.) but several reports for ME (ME-BRC website).

Spring. Two most unusual records: 1 at Plainfield 31 May 1959 (C.S. Boyd) and 1 in the north at Millsfield 14 Jun 2000 (R.A. Quinn; photo).

Fall. Extreme dates are 19 August to 3 December, with over half in September and October. Generally in New England, nearly all sightings occur along the coast, but in New Hampshire just half have been from the coast and the rest were found inland.

There have been 23 records from the coastal region including 4 from Star Island from 7–11 September. Nineteen mainland coastal region reports have ranged from 1 at Durham 4–7 Sep 1969 (A.C. Borrer *et mult.*) to 1 at Hampton from 23 Nov to 3 Dec 1961 (R.J. Bradley, A.C. Borrer *et al.*). Nine of these reports were in September, 3 in October, and 9 in November.

There have been 20 records from the central-inland part of the state ranging from 1 at Holderness 19 Aug 1981 (D. Erler *fide* B.S. Ridgely) to 1 at Candia 20 Nov 1975 (E.W. Phinney *fide* D.J. Abbott), 5 of which were in August, 6 in September, 8 in October, and 1 in November. Three northwestern records were at Hanover 18 Oct 1958 (H.C. McDade), Littleton 26 Sep 1964 (H.C. McDade), and the northernmost at Millsfield 26 Sep 1956 (R.C. and V.H. Hebert).

Eastern Kingbird *Tyrannus tyrannus*

Status. A common migrant and summer resident throughout the state but uncommon at higher elevations and in deep woods.

Early reports to 1950. First reported by Belknap (1792) as the “King Bird, *Lanius tyrannus*.” A bird of open spaces and forest edges, it was probably not very common in colonial times until the deforestation period 1750–1880 got under way. By late 1800s it appears to have been widespread and common from the White Mountains southward and locally common north of there up to 1500 feet elevation (Allen 1903), especially in the Connecticut River valley and near Lake Umbagog. Brewster found it locally common at the lake 1871–1909 (Griscom 1938), Goodhue (1877a) thought it a common summer resident at Webster, and Morrison (1883) reported it at Windham.

The Dwight collection contained 2 specimens taken at Hollis 10 May 1875 and 5 Jul 1883 (AMNH #368960–368961). It was listed as a common summer resident near Bridgewater (Howe 1901–1903), at Dublin (Thayer 1912), in Belknap and Merrimack Counties (Dearborn 1898), in the Durham region (Dearborn 1903), in the Jefferson region (Wright 1911), and at Surry (Kingsbury 1925). White found it common at Concord (White 1924b) and then as very common (White 1937). It was only a rare straggler at 1800 feet elevation at Crawford Notch (Marble 1907). Wright's (1911) latest fall report was 15 Sep 1910 at Cherry Ponds, and Lord's (1918) earliest spring record at Hanover was 3 May in 1912–1917.

This species was commonly reported to RNEB 1936–1949. Earliest spring arrival was 2 May in Hanover in 1942 (R.L. Weaver) and in 1943 (W.E. Lanyon), usual first arrival being 7–16 May. Latest report in fall was 10 Sep 1946 at Hanover (L. Forsyth), but all birds were typically gone by the first week of September. Allan (1931) reported 1 on the Isles of Shoals 29 Jun 1929, the exact island not specified, and Wright (1937a) found birds on Smuttynose Island in the summers of 1935 and 1936, the same years a pair bred on nearby Appledore Island, ME. In the summers of 1936–1938 at Epsom albino Eastern Kingbirds were reported (RNEB).

1950 to present. Though still generally common, its population has fluctuated 1966–1994, and its breeding population in shrub habitat has experienced a modest decline on balance since 1966 (Hunt 2009b).

Spring. The earliest known spring arrival is 1 at Monroe 13 Apr 1964 (R.B. Emery) and first arrivals have occurred by late April in one-third of the years 1950–2009. Peak spring migration period is the middle 2 weeks of May. Occasionally migrates in flocks which provide peak spring counts of 10 or more: 21 at the coast 9 May 1965 (R.W. Smart) and 47 in 1 cornfield in Bedford 19 May 1967 (W. Riehl). Extreme spring dates for migrants at the Isles of Shoals are 1 at White and Seavey Islands 4 May 2001 (D. Hayward, A. LeFrancois) to 1 there 22 Jun 1999 (D. Hayward, D. Trested), unless the latter was a visitor from Appledore where it breeds (Borrer and Holmes 1990); peak spring count is 15 on Star Island 1 Jun 2008 (E.A. Masterson).

Summer and breeding. The number of breeding birds decreased markedly in the early 1960s but recovered slightly by the end of the decade. New Hampshire BBS population trend data show a small decline averaging about 2.4% per year in 1966–2009 and 1999–2009 (Appendix IV). The *Atlas of Breeding Birds* project 1981–1986 found breeding evidence in 88% of priority atlas blocks statewide, in virtually 100% from the White Mountains southward, but only in scattered blocks at higher elevations and in Coos County (T. Richards *in* Foss 1994). Richards (*op. cit.*) suggested that the decline of optimum

open country habitat due to reforestation since 1950 may have been partially offset by the increase in Beaver ponds which create favorable habitat. High recent summer counts include 25 in Amherst 9 Jul 2008 (C. Sheridan), 23 in Concord 13 Aug 2006 (R.A. Woodward), 15 at Brentwood 16 Aug 2006 (T. Bronson), and 15 at Canterbury 24 Jul (R.A. Quinn). One at White and Seavey Islands 11 Jul 2001 (D. Hayward) may have been a wanderer from nearby Appledore Island, ME, where it nests. Cohn-Haft (1995) reported it uncommon and local at the Second College Grant.

Fall. Postbreeding wandering can begin by mid-July, as 3 at White and Seavey Islands 11 Jul 2001 and 17 Jul 1999 (both D. Hayward *et al.*). Onset of fall migration is difficult to pinpoint because it is sometimes a late breeder, but southbound birds are often suspected in the first week of August. As in spring, it sometimes migrates in flocks and often concentrates along the coast in fall. High inland migrant counts include 57 at Concord 19 Aug 2007 (R.A. Woodward), 24 in 1 field at Swanzey 3 Sept 1959 (T. Richards), 17 at Littleton 12 Aug 1978 (R.J. Bradley), and 22 there 20 Aug 1967 (R.J. Bradley). Coastal high counts include 30 at Hampton 31 Aug 1961 (R.W. Smart, V.H. Hebert), 45 at the coast 25 Aug 1968 (R.W. Smart), and 60 there on 17 Aug 1966 (R.W. Smart). The latest known fall records are 1 at Enfield 17 Sep 1999 (W. Scott), 2 at Durham 23 Sep 2009 (P. Brown), and 1 at Concord 5 Oct 1971 (M. Smith). Occasional at the Isles of Shoals: 2 at Star Island 5 Sep 2002 (T. Chase).

Scissor-tailed Flycatcher *Tyrannus forficatus*

Status. A very rare visitor from the south-central part of the country; 8 records 1960–2010: 6 times in spring 18 April to 27 June and twice in fall 1–28 October. Spring records are thought to be migration overshoots, occasionally in migrating flocks of Eastern Kingbirds.

1950 to present. The first state record was 1 at Wolfeboro 21 Sep to 1 Oct 1960 (J. Terry). Subsequent records include 1 at Seabrook in May 1964 (R. Young), an immature photographed at Rye 28 Oct 1968 (W.C. Chisholm), 1 at Exeter 16–17 May 1972 (H.A. Reynolds, P. Wood *et mult.*), 1 at Chichester 18–20 Apr 1976 (D.J. Abbott, S.A. Fogleman, H.W. Parker, T. Richards), 1 at Star Island 19 Jun 1991 (P. Smith; photo), 1 at Rumney 27 Jun 1991 (G. Ports, T. Sears), and 1 at North Conway 18–21 May 2010 (L. Thurston *et al.*). Recorded annually in MA (Veit and Petersen 1993, BO database 2010), 1 accepted record for VT (C.C. Rimmer pers. comm.) and over 20 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Fork-tailed Flycatcher *Tyrannus savana*

Status. Vagrant from South America. One record, an adult found at Odiorne Point State Park in Rye 18 Nov

2006 (A. Keitt, M. Krenitsky *et mult.*) remained to 20 Nov (S.R. Mirick); color photo of this bird by I. C. MacLeod on back cover of NHBR 25 (3). At least 16 records for MA (Veit and Petersen 1993, BO database 2010), 2 accepted records for VT (C.C. Rimmer pers. comm.), and 12 records for ME (ME-BRC website).

Taxonomic note. Virtually all North American specimens are of the highly migratory southern race *T. s. savana* which the New Hampshire bird is believed to have been based on detailed photographs of its outer wing feathers. This race breeds as far north as Argentina, winters in Venezuela and nearby countries, and typically occurs in eastern North America July to November when it overshoots on its northward migration.

FAMILY LANIIDAE

Loggerhead Shrike *Lanius ludovicianus*

Status. Unreported as a migrant since 1992 and extirpated as a breeder at least by 1950. From about 1880 to the 1930s–1940s, when there was much more open field and edge habitat, it was considered an uncommon migrant and local breeder.

Early reports to 1950. Allen (1903) considered it a rather rare and local summer resident and breeder in the 2 major river valleys as far north as the White Mountains and slightly farther north in the Connecticut River valley: at Charlestown the earliest spring sighting was 20 March, it nested for 2 seasons and a nest and 6 eggs were collected 26 Apr 1898 (W.M. Buswell); a most unusual winter record near Concord was 1 was collected 20 Jan 1879 (Deane 1879, Goodhue 1922); 1 was seen at Hampton Falls 20 Aug 1899 (W.E. Cram); the first documented nesting was at Hanover 30 May 1884 and in 1885 a pair nested there which had 6 eggs by 4 May 1885 (E.B. Frost); 1 was seen in Hollis 1 Sep 1885 (W.H. Fox); and at Intervale single birds were seen 25 Aug 1897 and 9 Aug 1899 (G.M. Allen). Howe (1901–1903) reported 1 at Tamworth 16 Aug 1898 (A.L. Reagh). Dearborn (1898) reported 1 at Northfield in Nov 1897. A nest with eggs was found at Tilton in May 1897 (G.H. Davis) and 1 was collected there 5 Sep 1897 (now in UNH mounted collection). Brewster only found it once as far north as the Lake Umbagog region in 1903 just over the border in ME (Griscom 1938). Possible breeding birds were found near Tinkerville 31 Jul 1908 and near Colebrook 29 Jul 1908, this last being the northernmost known report for the state (Rogers 1902–1919). Thayer (1912) mentioned 1 in fall about 1906 at Dublin, Marble (1907) noted 1 at Crawford Notch in Aug 1905, and birds were seen at Franconia 2 Sep 1904 and at Pequawket 30 Aug 1914 (Rogers 1902–1919). In the Jefferson region Wright

(1911) recorded nests in 1895–1899, 1905, 1907, and 1909, and in most cases young were successfully raised; 2 were also seen at South Lancaster 2 Oct 1906 and 2 single birds were found at widely separated points in Randolph through the 1910 summer.

Twenty-two reports were published in RNEB 1936–1949 including every year in this period, all but 4 of which were from the Connecticut River valley; none came from the coastal region. Earliest Connecticut River valley report in spring was 1 at Hanover 26 Mar 1937 (R.L. Weaver), usual spring passage was the first and second weeks of April, and latest in fall was 1 at Hanover 24 Oct 1941 (L. Forsyth, E. Haskins) except for a straggler at Monroe mid-Nov to 7 Dec 1948 (R.B. Emery, I.F. Hunt). The 1 spring report for the Merrimack River drainage was 14 Apr 1946 at New Hampton (V.H. Hebert); the other 3 Merrimack River drainage records were all in September from 1 Sep 1939 at Boscawen (Mrs. Kellogg) to 20 Oct 1949 at New Hampton (V.H. Hebert).

This species spread into appropriate habitat opportunistically as the forest was cleared and open pastures and scrub lands were created 1750–1880. Though it may have been present slightly before, the earliest New Hampshire record now available is 1884 which compares with the earliest known records for VT and for ME, both in 1877 (Mousley 1918). No nests were reported 1936–1949, so its retreat as a breeding species as reforestation progressed may have begun around that time.

1950 to present. Now very rare even as a migrant (Richards 1954–1956) and unknown to breed; sharp decline by the 1960s.

Spring. Earliest known spring arrival dates have been single birds at Charlestown 23 Mar 1975 (W.W. and G.L. Kidder). Typical spring arrival was 2 to 30 April, the mean of first sightings being 10 April. All March first arrivals have occurred since 1975. The 32 reports since 1950 were evenly divided between the Connecticut River valley, the Merrimack River valley, and the coast; surprisingly, one-third came from the northern third of the state: 1 at Pittsburg 2 Apr 1967 (V.H. Hebert *et al.*), 1 at Dummer 19 Apr 1964 (V.H. Hebert *et al.*), and 1 at Errol 27 Apr 1963 (D.J. Lennox *et al.*). Half of the spring records were in 1950–1967, and there have been none since 1992.

Summer and breeding. Only 5 records from the end of May to 1 at Newington 18 Jul 1997 (S.R. Mirick), all in the southern third of the state except 1 from Lancaster 8 Jun 1963 (W. Widger *et al.*). The last known summer record was in 1997. Its recommended status as a breeding species was “extirpated” (Smith 1979), and it was removed from the state list of breeding species in 2000 (NHBR 19 [2]: 31).

Fall. Usual fall migration 1950–1980 occurred 10 August to 15 October, mean date being 29 August. Extreme late

dates include 1 at New Hampton 28 Oct 1953 (L. Wallace) and 1 at New Hampton 31 Oct 1958 (R.C. and V.H. Hebert). Most reports are from the southern part of the state, mainly near the coast. Not found in fall since 1980.

Northern Shrike *Lanius excubitor*

Status. An uncommon and irregular migrant and winter resident. It is an irruptive species arriving when food supplies become scarce in the north.

Early reports to 1950. First reported by Belknap (1792) as the “Bird Hawk, *Lanius canadensis*.” It was considered common in Coos County in autumn and winter (Maynard 1871), and Goodhue (1877a) simply called it a “winter visitor” at Webster. The Dwight collection contained 1 taken at Hollis 26 Feb 1876 (AMNH #378480). Brewster found it at Lake Umbagog on every visit in October 1871–1909 and saw it there occasionally in winter (Griscom 1938); the earliest arrival there was 7 Oct 1930 (G.L. Perry). Dearborn (1898) considered it a migrant and occasional winter visitant in Belknap and Merrimack Counties, having seen it twice in January at Tilton. Cram (1899) reported 1 at Hampton Falls 27 Nov 1898, and Allen (1903) called it a “rather common” late fall migrant and winter resident in the state as a whole. Near Durham Dearborn (1903) said it occurred from November through the winter to April. Near Dublin Thayer (1912) considered it only a spring and fall migrant, not recorded in winter. In the Jefferson region it was an “uncommon late fall migrant and winter resident” seen every winter 1899–1910 (Wright 1911); 1 was at Lancaster 22 Feb 1911 (Spaulding 1911). At Concord White (1924b, 1937) found it an irregular and uncommon winter resident occurring on extreme dates from 30 Oct 1927 to 12 April in both 1924 and 1936. There is not enough New Hampshire data available to document incursions from 1899 to 1940 though Palmer (1949) mentions 8 flights that occurred in ME during this period that surely were reflected in New Hampshire as well.

Reports submitted to RNEB 1936–1949 list it annually between extreme dates of 18 Oct 1945 at New Hampton (S.A. Eliot, Jr.) and 16 Apr 1948 at East Wolfeboro (E.E. Pratt). The number reported per season ranged from “few” to major incursions in the winters of 1939–1940, 1944–1945, and 1949–1950, the last of these being the largest when over 15 birds were found.

1950 to present. At least 1 bird has appeared in each year 1951–2009, and there were at least 6 major invasions in that period. Arrival and departure dates are relatively constant but reported numbers have increased, probably due to greater numbers of observers.

Fall. Extreme early arrivals are ones at Whitefield 9 Sep 1962 and 2 Sep 1963 (both H.C. McDade) and at Canterbury 8 Oct 1994 (K.C. Elkins). Usual first arrival has

been 11 October to 20 November with a mean first arrival of 20 October. First arrivals 1950 to date have been mainly in the northern and central parts of the state. In some years the first bird has not appeared until late November such as 1 at Effingham 28 Nov 1992 (G.W. Gavutis, Jr.), but in other years general arrival has been much earlier: 18 were reported between 17 October and 29 Nov 1999 including birds as far south as Durham and Rye (v.o.). Migrants at Star Island have been 1 on 3 Nov 1968 and on 10 Nov 1974 (both ASNH field trips).

Winter. Between December and mid-March, birds are typically reported from 5–10 localities, but the number of sites and especially of CBC totals have risen since 1950. This may be because more birds are coming south, but more likely is due to an increased number of observers. High numbers of reports statewide and high CBC totals have indicated major incursion years. In such years the total number of birds reported has reached 100 and first fall arrivals are generally by October, last spring departures as late as April. Incursions since 1950 include 1970–1971, also a major flight year in MA; 1978–1979, also a very large flight year in MA; 1982–1983; 1990–1991 with 13 on 8 CBCs including 3 at Mt. Monadnock; 1991–1992 with 22 on 10 CBCs including 8 at Lee/Durham; 1995–1996 with 54 birds on 15 CBSs including 9 at the coast; 1999–2000 with 43 on 14 CBCs including 13 at the coast; in 2003–2004 there were 43 birds reported statewide and 18 were found on 5 CBCs; 2004–2005 with 33 reports of individual birds and 20 found on 12 CBCs; 2007–2008 with 46 birds on 14 CBCs with a high of 18 at the coast; 2008–2009 with 45 reports and 10 on CBCs. It has been noted that 1 good year often is followed by another good one; 1990–1992 and 2007–2009 illustrate this pattern.

Spring. Most birds have left for the north by mid-March and all are usually gone by early April. Extreme late dates are 1 at Lebanon 21 Apr 1996 (P.D. Hunt), 1 at Moultonborough 3 May 1978 (A.C. Borrer), and 1 at Milford 19 May 1982 (A.E. Ames).

FAMILY VERIONIDAE

White-eyed Vireo *Vireo griseus*

Status. Apparently present in the southern parts of the state for a few years in the late 1800s, then disappeared and only reappeared in 1955. Became a rare but increasing visitor in spring and fall through 1980, may have very rarely nested near the coast, but thought not to have done so since 1990.

Early reports to 1950. Reported in 1880–1907 and not again for nearly 50 years. Early reports included “carrying nesting material” at Nashua in 1881 (Thurber 1884); at Franklin in Belknap County (Dearborn 1898) where a

nest and the bird were observed at 6 feet (G. Stolworthy), though this “record is perhaps to be questioned” (Allen 1903); at Hampton Falls (W.E. Cram *in* Allen 1903); reported to have bred on Hooksett Road at Massabesic Lake near Manchester in 1899 (Batchelder and Fogg 1899, Batchelder 1900) but “records are unsatisfactory” (Allen 1909); and at Sewell’s Falls 12 May 1902 (Abbott 1906). Bagg and Eliot (1937) reported 1 from Chesterfield in 1907 (Mrs. Davenport). Reports from as far north as Grafton County (Sherman 1889) and 1 July to mid-September at Kearsarge (Porter and Porter 1904) seem particularly suspect today. Considered “doubtfully recorded in...New Hampshire” by Forbush (1929). Bent (1950) had additional records from Jaffrey and Boscawen. At least some of the above records are probably accurate suggesting that it was a rare visitor and very occasional breeder in the extreme lower Connecticut and Merrimack River valleys and at the coast 1800–1907. In MA in about the 1850s–1860s it was locally uncommon in Essex County (Coues 1868; Townsend 1905, 1920) just south of the New Hampshire border but declined rapidly after about 1910 (Forbush 1929). No reports were submitted to RNEB in 1936–1949.

1950 to present. The first report since 1907 was in 1955, and birds were reported in 22 years and in very gradually increasing numbers to 2000, after which the number reported has fallen. Nearly all reports are from near the coast. Breeding might be confirmed soon since it has been expanding its range to the northeast (Griscom and Snyder 1955) and has been confirmed breeding in adjacent Essex County, MA (T.L. Lloyd-Evans *in* Petersen and Meserve 2003).

Spring. Earliest arrivals include Concord 30 Apr 2004 (M. Suomala) and at White and Seavey Islands 1 May 2001 (D. Hayward), with general first arrival date of 17 May. Late spring reports include Rye 19 Jun 1982 (E.W. Phinney) and North Hampton 6–7 Jun 1971 (D.W. Holmes). Since 1955 it has been recorded in 24 years, at the coast in 20 of those years. Inland spring records were from Chester; Hollis; Concord; Weare; from Peterborough on 21 May 1955 (W.P. Hill *et al.*), the first report after the half-century lapse; and as far north as Conway 22–23 May 1994 (D. Fahl-King) and Wentworth’s Location 12 May 2010 (D. Dionne). Four of the spring records were for 4–10 days, the rest just for 1 day. The first known record for the Isles of Shoals was 1 banded at Star Island 12 May 2000 (R.W. Suomala, K. Palfy).

Summer. Breeding is not yet confirmed though during the *Atlas of Breeding Birds* 1981–1986, birds were reported at 2 separate coastal locations, 1 of which was thought probably to be nesting (Foss 1994); 1 at Rye 19 Jun 1982 (E.W. Phinney). A bird as far north as Sugar Hill 21 Jul 1989 (J.C. McIlwaine), the only known July report, was possibly a case of postbreeding dispersal.

Fall. Very irregular at this season, occurring in less than half the years since 1990. Birds were reported 22 September to 16 November with a mean date of 9 October, 7 records at the mainland coast, 1 inland at Concord 22 Sep 1968 (C.E. Smith) and 1 at Star Island 16 Nov 1969 (R.W. Smart *et al.*).

Bell’s Vireo *Vireo bellii*

Status. Vagrant from the west; 3 records. The first confirmed New England record was from New Hampshire.

Early report to 1950. One collected in Durham 19 Nov 1897 by Dearborn (1903). Identity confirmed by Brewster who determined “it was a perfectly typical example of the species” (Brewster 1901, Allen 1903). Specimen is now MCZ #193473.

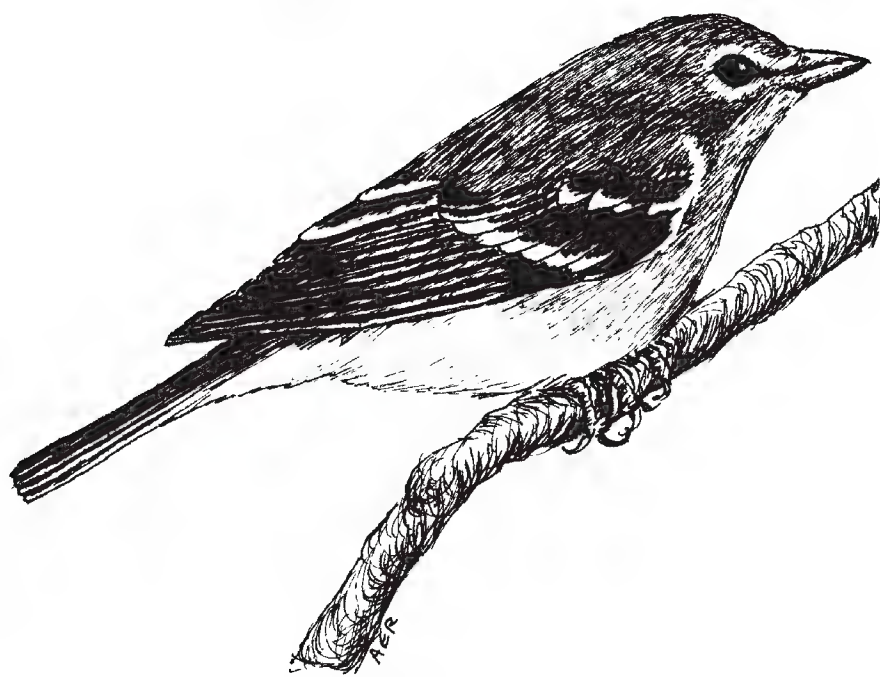
1950 to present. Two records: 1 at the Exeter wastewater treatment plant 1–9 Nov 2003 (S.R. Mirick *et al.*) with many pictures taken (NHBR 22 [3]: 48); and 1 at Odiorne State Park, Rye, 1–5 Oct 2009 (S.R. Mirick *et mult.*; photos).

Taxonomic note. The 1897 specimen is believed to be nominate *C. b. bellii*. This race ranges east of the Rocky Mountains from South Dakota to Illinois south to Texas. There are 4 other western races which show almost no yellow, are somewhat smaller and are longer-tailed. Color photographs and videos of the 2003 record suggest that bird may have been 1 of the western forms (*fide* D.A. Sibley). Three records for ME (ME-BRC website, P.D. Vickery pers. comm.) and 2 records for MA in 2005 and 2006 (BO database 2010).

Yellow-throated Vireo *Vireo flavifrons*

Status. An uncommon and local summer resident and migrant which has expanded its range in the state.

Early reports to 1950. The earliest available report is of the bird collected at Hollis 13 Jul 1876 by J. Dwight (AMNH #379068) who also collected a second bird there 27 Jul 1887 (AMNH #379069). Goodhue (1877a) called it “rather common” at Webster yet Dearborn (1898) had only 2 reports in Belknap and Merrimack Counties during a ten-year period. Allen (1903) reported it “common” at Hollis (*fide* W.H. Fox) and at Manchester but otherwise found it only south of the Lakes Region. The northern extent of its known range was Bridgewater (Allen 1889), Franconia where 1 was found 3 Jun 1889 (Torrey 1900), and it was regular in the Connecticut River valley north to Hanover (Howe 1901–1903). Its northernmost early record was at Lancaster where it was seen carrying nesting material 18 Jun 1910 and may have bred (Wright 1911). In the Durham area, Dearborn (1903) thought it regular at Hampton and Exeter, and Scott (1921) called it sometimes fairly common but at other times absent.



Marble (1907) found it an uncommon migrant at 1800 feet elevation at Crawford Notch and only seen in early September. Thayer (1912) did not report it for the Dublin area at all. Lord's (1918) earliest spring arrival at Hanover was 5 May and his six-year average 1912–1917 was 12 May. At Webster, Goodhue (1922) described it as “by no means common” in the central part of the state. At nearby Concord, White (1924b) thought it only a rare spring migrant and later (1937) called it an uncommon summer resident and migrant though present in the summers 1914–1918 and 1928–1933. Brewster (1906) believed it notably decreased 1875–1901 in MA, and in 1910–1950 it decreased rapidly (Griscom and Snyder 1955), becoming rare and local, a trend surely reflected in New Hampshire to some degree.

Reports submitted to RNEB in 1936–1949 show it to have occurred annually but not north of Ossipee and New Hampton in the wider Lakes Region though regularly to Hanover and Monroe in the Connecticut River valley. Earliest dates in spring were 4 May in Hanover in both 1942 and 1944 (R.L. Weaver *et al.*). Peak spring migratory movement at Hanover varied considerably year to year: 11–16 May 1942 (14 birds) but 19–25 May 1941 (both R.L. Weaver *et al.*). Southbound migrants were noted by the last week of August at both Monroe and Ossipee. Latest report for the Connecticut River valley was 18 Sep 1948 at Monroe (L. Forsyth) and for the Merrimack River valley was 22 Sep 1937 at Manchester (E.J. Goellner). Not a single report was published for the coastal region from 1936 through 1949.

In summary, this species was not particularly common in the southern third of the state before 1900 and may have declined somewhat further by 1950 though there was a moderate population in the Connecticut River valley at least north to Monroe.

1950 to present. It became gradually scarcer in the state during the 1950s (Richards 1956) but increased in some

local areas such as Andover after 1965 (K.C. Elkins *in* Foss 1994) and numbers have grown further 1980–2009. Breeding population in hardwood and mixed forest listed as stable by Hunt (2009b).

Spring. Earliest known reports are at Kensington 28 Apr 2009 (G.W. Gavutis, Jr.), and 29 April in 1995 at Lebanon (P.D. Hunt) and in 2003 at Concord (B. Densmore). While the number of birds per location has remained low since 1950, the number of locations where it was found has increased to over 10 per year, suggesting a modestly increasing population. Migration typically peaks 4–10 May and is usually over by 31 May. Peak known count at 1 location is 8 at Pawtuckaway State Park, Nottingham, 22 May 1995 (D.B. and T. Donsker), most likely birds on territory. Allison and Allison (1979) report 1 at Dublin 3 Jun 1967.

Summer and breeding. Ridgely (1977) found it an uncommon breeder near Squam Lake. The *Atlas of Breeding Birds* project 1981–1986 found more of this species than had been reflected in earlier reports (Foss 1994) and documented wide though scattered distribution north to the southern foothills of the White Mountains, northernmost being at Littleton. The atlas recorded 44 priority blocks of confirmed to possible breeding to which another 7 sites were added in 1995. Also, in 1950–2007 it was reported from progressively more northern localities. Examples include Chatham 1967 (R.L. Heald), Woodstock 5 Jun 2001 (L. Prout), 4 at Franconia 1970 (BBS), Columbia 8 Aug 1995 (L. Killam), Northumberland 15 Jun 1997 (P.D. Hunt), and Pittsburg 1967 (R.W. Lawrence). Nests were first found in Hanover 1962 (C. Wellman). Birds were found on 12 of 15 BBS routes south of the mountains and 4 of 7 routes north of the mountains, and possible nesting was found as far north as Jackson, Errol, and 5 locations near Littleton. Birds have also been found at 3 sites with elevations in the 1000–1300 foot range (C.S. Robbins *in* Foss 1994). New Hampshire BBS Population trend data show an increase of 1.9% per year 1966–2009 and an increase of 5.2% per year 1999–2009 (Appendix IV).

Fall. Earliest southbound migration has been noted in the first week of August and peak fall migration period is typically the last week of August and the first week of September. Reports are seldom for more than 1–2 birds at a time. Unusual northern reports are 1 at Columbia 8 Aug 1995 and 1 there 27 Aug 2001 (both D. and B. Killam). One was at Star Island 12 Sept 1999 (R.W. Suomala *et al.*). Late reports are usually in the last 2 weeks of September; Allison and Allison (1979) report 1 at Dublin 27 Sep 1953. Extreme late records were 1 as far north as Columbia 21 Sep 2003 (B. and D. Killam), Sandwich 6 Oct 1999 (A.J. Vazzano), and Hollis 4 Oct 1967 (T. Richards).

Blue-headed Vireo *Vireo solitarius*

Status. Common spring and fall migrant and fairly common to common summer resident statewide. It extended its season in the state in the last 50 years.

Early reports to 1950. It seems possible that the “Blue Titmouse, *Parus americanus*,” of Belknap (1792) may belong here. As a summer resident, some early writers described it as unevenly distributed and uncommon in Belknap and Merrimack Counties (Dearborn 1898), the Lake Umbagog region 1871–1909 (Griscom 1938), in Crawford Notch (Marble 1907), at Bridgewater (Howe 1901–1903), in the Jefferson region (Wright 1911), and at Concord (White 1924b, 1937). Other writers considered it common as at Webster (Goodhue 1877a) and in the Dublin area (Thayer 1912). Allen (1903) and Dearborn (1903) described it as a rare summer resident in the southeast and on the coastal plain but fairly common near Mt. Monadnock and the eastern rim of the Connecticut Valley and throughout mixed woods in the central and northern parts of the state. The Dwight collection contained 4 specimens taken at Hollis April to July from 1876 to 1885 (AMNH #379094–379097). It was recorded up to 3000 feet in the White Mountains (Allen 1903), summer nests were found there in the 1890s (Clark 1899), and a nest was photographed at Chesham 24 Jun 1934 (Poor and Sanborn 1935). White’s (1937) average spring arrival at Concord was 26 April and his latest fall dates were 16 Oct 1927 and 24 Nov 1924, the latter being the latest known state record.

Since it is an early spring migrant, late winter freezes or snowstorms can kill many early migrants and reduce total numbers for a few years afterwards. This has happened in New Hampshire in 1889 (Allen 1903) and in 1940 (Foss 1994), and severe winter freezes on the Gulf States wintering grounds in 1894–1895 also reduced local breeding populations. The great hurricane of Aug 1938 blew down many Eastern White Pines, a favorite nesting tree (Veit and Petersen 1993). As a result of these events the New Hampshire breeding population likely fluctuated and remained unevenly distributed.

Reports submitted to RNEB show it to be a regular and moderately common spring and fall migrant in 1936–1949. Earliest reported spring arrival was 15 Apr 1938 at Concord (F.B. White) and next earliest was 17 Apr 1941 at Harrisville (J.M. Abbott), but most first arrivals were not until the last week of April. Peak spring migration period was the first 2 weeks of May, late migrants not distinguishable from summer residents but thought to have passed through by 25 May. Peak spring count was 30 at Hanover 9 May 1942 (R.L. Weaver *et al.*), the only reported spring count over 10. A census of the Andover area in Jun and Jul 1948 recorded 22 birds (K.C. Elkins), and 10+ were found at Randolph in Aug 1949 (J. Maddock *et al.*). The earliest southbound migrants were usu-

ally noted in the first week of September, and peak migration period was the last 2 weeks of September. Latest record for the Connecticut River valley was 10 Oct 1943 at West Lebanon (L. Forsyth), in the Merrimack River valley was Manchester 18 Oct 1938 (E.J. Goellner), and at the coast was 16 Oct at Durham (Mrs. Bisbee).

1950 to present. Continues common with some fluctuation in numbers and an uneven distribution. Population trend listed as increasing by Hunt (2012).

Spring. Earliest known arrivals are at Concord 31 Mar 1998 (R.W. Suomala) and at Durham 8 Apr 1985 (W.S.



Tremblay). Mean first arrival date is 22 April. First arrivals have been getting earlier. Mean first arrival in 1950–1979 was 24 April with the earliest 17 April; mean first arrival in 1980–2009 was 21 April and there were 7 years in this period with a first appearance before 17 April. Since 1950, roughly 65% of first arrivals were in the central part of the state (Lakes Region and Merrimack River valley), 25% were in the southwest and Connecticut River valley (Dublin, Chesterfield, Monroe), and 10% were in the southeast and coastal regions. Typical high counts at a single locality were 10–14 birds but fewer since 2000; extreme high count known is 28 birds on territory near Lake Umbagog 17 May 1964 (V.H. Hebert). Latest date for a probable migrant is 1 at Portsmouth 30 May 1973 (J.E. Cavanagh).

Summer and breeding. New Hampshire BBS data show fairly wide fluctuations while national data show significant increases throughout the northeast (Robbins *et al.* 1986). New Hampshire BBS data show “rather low numbers 1966–1970, an increase in 1971–1979, and another decline in the early 1980s. Low numbers from 1966–1970 might have resulted from losses suffered during a May snowstorm in 1963. The increase during 1971–1979

would then constitute normal recovery” (Foss 1994). Longer-term BBS population trend data show a modest increase averaging about 2.5% per year in 1966–2009 and 1999–2009 but higher rates regionally and nationally (Appendix IV). The *Atlas of Breeding Birds* project 1981–1986 demonstrated that this species is mainly an upland bird. It was found in almost all priority atlas blocks above 1000 feet elevation, two-thirds of blocks at 500–1000 feet and less than half the blocks at 200–500 feet. It is reasonably well distributed in south, central, and southwestern parts of the state; more densely distributed in the White Mountains and northward; but sparsely distributed in the coastal region (Foss 1994). Allison and Allison (1979) found it an uncommon summer resident near Dublin, Ridgely (1977) called it fairly common in the Squam Lake area, and Cohn-Haft (1995) described it as a common breeder at the Second College Grant. Summer counts of 10–30 are reported from such towns as Nottingham, Jefferson, Pittsburg, and Umbagog; 20 at Pittsburg 26–28 Jun 1959 (ASNH field trip) and 31 at Pittsburg 18 Jun 2006 (E.B. Nielsen).

Fall. Postbreeding dispersal birds and the first southbound birds have been suspected by mid-August. Peak migration period is late August to mid-September; a high northern count is 30 at Dixville 14 Sep 2002 (K. Babbitt). But in 2009, 8 were found at Concord 26 Sep (P.D. Hunt), 7 in Sandwich 28 Sep (A.J. Vazzano), and an unprecedented 21 birds on 4 Oct between Concord and Webster (P.D. Hunt, R.A. Quinn). The last birds are usually gone by mid-October, and the latest known reports from the coastal region are Star Island 29–30 Oct 1970 (D.W. Finch) and Rye 12 Nov 2005 (S.R. and J. Mirick), from the Connecticut River valley is 1 at Enfield 4 Nov 1990 (P.D. Hunt), and from the Merrimack River valley are 1 at Holderness 14 and 17 Nov 2000 (J. Williams) and 1 at Raymond 1 Dec 2008 (T. Bronson). Most last yearly reports are from the coast with the rest evenly divided between the 2 major river valleys and the Lakes Region.

Warbling Vireo *Vireo gilvus*

Status. Uncommon but regular spring and fall migrant and locally common summer resident at low elevations. Appears to have extended its range and numbers since 1950 as well as arriving earlier in spring and staying later in fall.

Early reports to 1950. Generally an uncommon summer resident north to the White Mountains (Allen 1903, Forbush 1929) but common in some areas. Most often found in big maples *Acer* sp. and American Elms *Ulmus americana* on village streets. Goodhue (1877a) called it common at Webster, Faxon and Allen (1888) reported it at Franconia, Dearborn (1898) thought it common in Belknap and Merrimack Counties, Howe (1901–1903) thought it common in the Bridgewater area, Thayer

(1912) said it was common in Keene, and Wright (1911) found it common at Lancaster, though sporadic in nearby Jefferson. J. Dwight collected 2 males at Hollis 11 and 23 Aug 1876 (AMNH #379578–379579) and a female at Wolfeboro 11 Sep 1879 (AMNH #379580). Northernmost localities known were Intervale (Allen 1903) and Lancaster; W. Brewster searched for it in Colebrook but never found it in New Hampshire there or near Lake Umbagog, though he found it once just over the border in ME in 1896. Dearborn (1903) found it less common near the coast than at some inland localities, his extreme dates for that region being 4 May to 19 September. White (1924b, 1937) said its population had fluctuated, having declined in 1917–1927 but then recovering into the 1930s (Bagg and Eliot 1937, Griscom 1949a). Insect spraying and loss of elms may have accounted for some of the decline which began earlier in adjacent MA in the mid-1880s (Veit and Petersen 1993). Lord’s (1918) earliest arrival date in spring at Hanover was 4 May in 1912–1917 and his average arrival date was May 5.

Reports submitted to RNEB in 1936–1949 show it to be a regular spring and fall migrant and summer resident, especially in the 2 major river valleys. Earliest known spring arrival was 1 at Hanover 29 Apr 1942 (L. Forsyth), and usual first arrival occurred in 3–13 May. Earliest arrival in northern Coos County was 1 at Colebrook by 24 May 1949 (D.W. Brainard). Northern late spring and summer reports were from Littleton 22 Jun 1939 (S.A. Eliot, Jr. *et al.*) and for the month of Jul 1940 at North Stratford (M. Johnson). Lingering local residents or possible southbound migrants were noted at Andover by 15 Aug 1942 (K.C. Elkins), and peak fall migration period recorded was the last week of August and the first week of September. Extreme latest fall dates were 18 Sep at Hanover in 1946 (L. Forsyth), at New Hampton in 1947 (V.H. Hebert), and at Andover in 1949 (K.C. Elkins).

1950 to present. Forestry practices which have favored hardwoods in northern parts of the Connecticut River valley may have contributed to a range extension there (V.H. Hebert and K.C. Elkins *in* Foss 1994). Breeding population listed as stable since about 1990 by Hunt (2009b).

Spring. Earliest known spring arrivals are at Auburn 21 Apr 2001 (H. Chary *et al.*) and 2 in Lyman 28 Apr 1990 (S.B. Turner). Mean first arrival since 1950 has been 4 May, and peak spring migration period is the middle 2 weeks of May. Mean first arrival 1950–1989 was 6 May and by 1990–2009 it was 1 May. This change may be attributable to a population increase in the state and also a northward expansion of its range in turn related to warmer spring weather. First arrivals appear primarily inland rather than at the coast, similar to its relatively less common status there in the early 1900s (Dearborn 1903). Peak spring counts are 15 at the coast 23 May 1965 (O. Earle *et al.*), 14 at Lower Mascoma Lake 16 May 1999

(P.D. Hunt), and 12 at Lee 29 May 1969 (O. Earle), though some of these birds were likely residents. The last migrants have typically passed through the southern part of the state by the end of May.

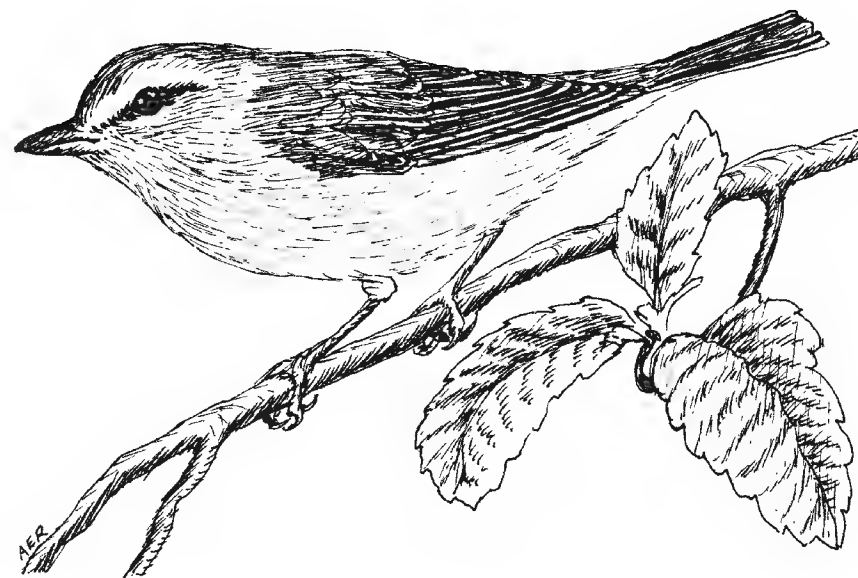
Summer and breeding. Though typically a lowland species, it has been found up to 1200 feet elevation (Ridgely 1988). Typical summer counts at a single locality are 1–10 birds, but high counts include 50 at Westmoreland 9 Jun 1996 (A. Greenwood) and 20 at Canterbury 8 Jun 1994 (E. Janeway). New Hampshire BBS data show virtually no increase in population trend in either 1966–2009 or 1999–2009 (Appendix IV). During the *Atlas of Breeding Birds* project 1981–1986, it was found in 62% of priority atlas blocks, mainly but sparsely south of the White Mountains and along the Connecticut River Valley (Foss 1994). Most common in the southeastern part of the state. Single birds were present as far north as Errol 1 Jun 1997 (R.A. Quinn, J.W. Berry) and Pittsburg 9 Jun 1997 (E.B. Nielsen, S. Sweet).

Fall. The earliest southbound migrants have been suspected as early as the first week of August, but peak migration period is last week of August to mid-September. A high fall count was only 5 at Canterbury 26 Aug 1989 (R.A. Quinn). Extreme dates for birds found at Star Island are 1 banded 27 Aug 2000 (R.W. Suomala) to 21 Sept 1989 (K. and G. Collins). Extreme late report from the Connecticut River valley is 30 Sep 1964 at Gilsun (M. Wright), from the Merrimack River valley is 3 at Chester 3 Oct 2006 (A. Delorey), and from the coast is at Rye 15 Oct 2006 (S.R. and J. Mirick). Six of the 7 latest reports known for the state were in 1991–2007.

Philadelphia Vireo *Vireo philadelphicus*

Status. Rare spring and uncommon fall migrant and uncommon summer resident at medium elevations in the White Mountains and Coos County.

Early reports to 1950. Probably the first birds recorded for the state were collected at Lake Umbagog 3 and 4 Jun 1872 and 4 were collected there 29–31 Aug 1874 (Deane 1876; Brewster 1880, 1903; Allen 1903; Griscom 1938); unfortunately the precise locations indicating whether collected in ME or New Hampshire have not survived. A specimen collected at Hollis 26 May 1876 by A. F. Eaton could be considered the first state record (Fox 1877). Brewster (1880) considered birds not uncommon summer residents near Lake Umbagog and found several nests farther west to Dixville Notch on 10 Jun 1880. Two were collected in Coos County 28 Aug 1883 by C. R. Lamb (MCZ #330455, #324014). It was found at Franconia mid-Jun to Jul 1887 (Faxon and Allen 1888), also at Franconia 16 Jun 1889 (Torrey 1890), at Dixville Notch in breeding season 1903 (R. Hoffmann in Allen 1903), “probable migrants” were found at Chocorua 5 Jun 1900 (F.H. Allen), 1 was collected at Dublin 29 Sep 1899 and



in fall 1900 (Thayer 1902), 1 was collected at Fitzwilliam 27 May 1897 (Thayer 1902, 1912), singles were at Franconia 23 and 26 Sep 1900 (B. Torrey), and 1 was seen at Intervale 26 Aug 1899 (Allen 1903). Two other early reports include 1 at the Second Connecticut Lake 28 Aug 1905 (Rogers 1906) and at Jaffrey 25 Aug 1923 (Danforth 1924). In the Jefferson region Wright (1911) called it “a rather rare fall migrant 29 Aug–27 Sep” but which he saw almost annually 1903–1910, up to 12 birds in 1 season (Wright 1911). Marble (1907) only found it at Crawford Notch in September, and Lord (1918) had but a single record on 3 Jun 1915 at Hanover.

Several early writers completely omitted it, very possibly because they did not recognize it. Goodhue (1877a), Howe (1901–1903), Dearborn (1898, 1903), and White (1924b, 1937) all left it out, and Goodhue (1922) had no more information than Allen (1903).

Reports submitted to RNEB in 1936–1949 included only 3 spring reports: 16 May 1949 at Dixville, very early so far north (F. Allen); 25 May 1946 at Ossipee (E.E. Pratt); and 31 May 1947 at East Andover (Rich). Aside from a few reports at Coos County breeding localities in July, the remaining records are of apparent migrants found in the Lakes Region and south. They cluster in the 18 August to 11 September period; extreme latest are 1 at Albany 24 Sep 1937 (A. Lincoln), at New Hampton 29 Sep 1947 (V.H. Hebert), and at Andover 6 Oct 1946 (K.C. Elkins).

1950 to present. Significant evidence of a decline in numbers 1950s–1975 and since, but population trend is listed as uncertain by Hunt (2012).

Spring. Earliest known spring arrivals are 1 May 1998 at Lyman (M. Turner) and Waterville Valley 5 May 1957 (H.C. McDade *et al.*). Peak migration period is the last 2 weeks of May, and mean first arrival is 18 May. On balance it is a relatively late migrant in relation to other vireos and most warbler species (Hunt 2007a), arriving when trees are already leafed out, and it often does not sing before reaching its breeding grounds; thus it is prob-

ably overlooked regularly. First sightings come from areas where it is a known breeder; examples include Pittsburg 13 May 2000 (E.B. Nielsen) and 2 at Berlin 18 May 1994 (R.A. Quinn). Northbound migration is thought to be over by the last week of May in most years. Late spring reports of presumed migrants well south of the breeding grounds include 1 at Plymouth 8 Jun 1976 (S.A. Fogleman), at Charlestown 7 Jun 1971 (W.W. Kidder), at Portsmouth 4 Jun 1968 (E.W. Phinney), and at Amherst 3 Jun 1991 (M. Suomala).

Summer and breeding. A very uncommon summer resident found at elevations of 1500–2500 feet in mountains near Squam Lake (Ridgely 1988), at 1500–3000 feet elevation in the White Mountains (T. Richards *in* Foss 1994), and occasionally at slightly lower elevations north of the White Mountains (R.W. Suomala pers. comm.). Summer reports have come from the White Mountains, its notches, and areas farther north such as Jefferson, Errol, Lake Umbagog, and especially Pittsburg. New Hampshire BBS data show a significant population trend decline averaging 6.5% per year in 1966–2009 and 1999–2009 (Appendix IV) in contrast to Hunt (2009b). A very high count was 28 pairs at Pittsburg in 1961 (R.W. Smart, V.H. Hebert *et al.*). The *Atlas of Breeding Birds* 1981–1986 recorded it in 18 priority atlas blocks, 4 of which were confirmed nesting reports. Most reports were in the White Mountains and Coos County, but it was found in Jackson 16–17 Jun 1996 (J. Warren *et al.*) and in Orange on Mt. Cardigan 10 Jul 1990 (P.D. Hunt). No known breeding reports in the Squam Lake region since 1990 (R.S. Ridgely pers. comm.). Three unusual reports of stragglers in the southern part of the state were 1 at Wilmot in 1984 (BBS), at Peterborough 22 Jun 1984 (BBS), and 1 at Hampton Falls 28 Jul 1965 (E.W. Phinney). Observed “feeding young” in the Squam region 21 Aug 1972 (B.S. Ridgely).

Fall. Early reports of presumed migrants well south of breeding areas include New Hampton 12 Aug 1963 (V.H. Hebert) and Epsom 14 Aug 1966 (B.R. Ring). Peak migration period is the last week of August through the first 2 weeks of September. Reports from Star Island range from 20 Aug 1999 (R.W. Suomala) to 19 Sep 1999 (A. and B. Delorey). All birds have usually left by the last week of September. Of late reports 15 to 30 September, 50% were from Lakes Region and Merrimack River valley, 30% from the coast, and 20% from the White Mountains northward. Very late northern reports include Whitefield 18 Sep 1971 (R.J. Bradley), 4 at Pittsburg 23 Sep 1962 (V.H. Hebert *et al.*), 1 at Pittsburg 25 Sep 1976 (V.H. Hebert), and 1 at Dixville Notch 28 Sep 1958 (V.H. Hebert *et al.*). These late northern reports could be migrants from farther north or local nesting birds which are at the southern edge of the breeding range and are the last to leave. The extreme late reports known are at Exeter

16 Oct 2004 (S.R. Mirick *et al.*), Lebanon 13 Oct 2002 (S.R. Sturup), and 1 at Durham 10 Oct 2008 (S. Young).

Red-eyed Vireo *Vireo olivaceus*

Status. Very common summer resident and common spring and fall migrant. Its status appears little changed for 200 years.

Early reports to 1950. Allen (1903) suggests that the “Little Hang-bird, *Parus pendulinus*,” of Belknap may belong here. Considered a common to abundant summer resident statewide by every early writer: at Webster (Goodhue 1877a), Belknap and Merrimack Counties (Dearborn 1898), Durham area (Dearborn 1903), Bridgewater (Howe 1901–1903), Lake Umbagog (Griscom 1938), entire state (Allen 1903), Northfield (Dearborn 1905), Crawford Notch (Marble 1907), Dublin (Thayer 1912), Jefferson region (Wright 1911), and Concord (White 1924b, 1937). J. Dwight took 2 specimens at Campton Village 18 Jul 1885 (AMNH #379305–379306) and 4 at Hollis in June and July in the years 1876, 1883, and 1884 (AMNH #379307–379310). Allen (1903) reported 1 at Warren 30 Sep 1895 (W. Faxon). Wright (1911) reported it up to 3000 feet elevation in the White Mountains, counted up to 60–65 in a day, and recorded a late fall date of 5 Oct 1908. Lord’s (1918) earliest arrival was 5 May and his six-year average 1912–1917 was 15 May at Hanover.

Reports submitted to RNEB show it to be a regular spring migrant, its earliest appearance being 4 May 1942 when 5 were at Hanover (L. Forsyth, E. Haskins), and usual first arrival was by 17 May. In fall, southbound birds were noted especially in the last week of August and the first 2 weeks of September. Extreme late dates reported were 27 Sep 1948 at New Hampton (V.H. Hebert), 30 Sep 1944 at Andover (K.C. Elkins), and 10 Oct 1949 at Hanover (C. Casas).

Forbush (1929) believed it adapted to the open forests and roadsides as lands were cleared in colonial times. Thus its numbers apparently remained relatively high through the entire period of deforestation from 1750–1880. It seems likely that more Red-eyed Vireo habitat exists in New Hampshire today than in the 1800s (E.C. Janeway *in* Foss 1994), so absolute numbers of this species may be greater than at the height of agricultural acreage in the state.

1950 to present. Continues as a common to very common migrant and breeding resident. Population trend listed as stable by Hunt (2012).

Spring. Earliest known arrivals are 1 at Hancock 28 Apr 2009 (P. Brown, J. Tilden) and on 2 May in 4 different years. Mean first arrival 1950–2009 was 11 May, but in 1994–2009 mean first arrival was 5 May; typical peak spring migration period was the last 3 weeks of May.

High counts in 11 years were 10–43 birds in 21–29 May. Peak known spring counts were 43 at New Hampton 22 May 1961 (V.H. Hebert *et al.*), 22 at Woodstock 28 May 2002 (J. Williams), and 21 at Nottingham 18 May 1998 (A. and B. Delorey), probably including both migrants and residents. The last spring migrants are thought to have passed through by the second week of June. There are over 10 June records from the Isles of Shoals where it does not breed. Latest there are 16 banded on Star Island 3 Jun 2000 (R.W. Suomala), 1 seen at Star Island 9 Jun 1972 (A.C. Borrer), 6 banded at Star Island 11 Jun 1975 (E.W. Phinney), and 1 seen at White and Seavey Islands 20 Jun 1998 (J. Ellis, D. Hayward).

Summer and breeding. This is one of New Hampshire's most widespread, abundant songbirds as shown by the *Atlas of Breeding Birds* project 1981–1986 (Foss 1994); it was found in 99% of priority atlas blocks throughout the entire state. Robbins *et al.* (1986) reported declines in this species in the state in 1958, 1959, and 1960. High counts made before New Hampshire BBS surveys began in 1966 included 82 pairs at New Ipswich 1960 (C. Wellman), 62 pairs New Hampton 1961 (R.W. Smart, V.H. Hebert), and 143 in the Lake Umbagog region in 1965 (R.W. Smart *et al.*). New Hampshire BBS population trend data show an average of about 1% increase per year in 1966–2009 and 1999–2009 (Appendix IV). Absolute statewide BBS counts rose from 600 in 1966 to 1000 in 1972–1978, dropped to near 600 in 1993, and have been lower since. After 1966, high counts include 58 at Lake Umbagog 2 Jun 1999 (R.A. Quinn), 45 at Westmoreland 9 Jun 1995 (M.A. Greenwood), 45 at Nottingham 7 Jun 2007 (E.A. Masterson), and 32 at Windham 25 May 2003 (M.G. Harvey). New Hampshire BBS counts in the 1970s were the highest of all states and provinces in North America (Robbins *et al.* 1986). Reports implying very late nesting are “pair feeding young” at Bethlehem 30 Aug 1964 (V.H. Hebert *et al.*), a pair feeding young 9 Sep 2003 at Sandwich (A.J. Vazzano), and “feeding young” at Pittsburg 27 Sep 1957 (W.P. Hill).

Fall. Either postbreeding dispersal or first suspected southbound movement has been noted in the first 2 weeks of August: 1 at Lee 12 Aug 1963 (O. Earle *et al.*) and 1 at East Kingston 13 Aug 1978 (D.W. Finch). Peak fall migration period is the last week of August through September. Sample high counts are 27 at Pittsburg 17 Aug 2001 (E.B. Nielsen), 15 at Star Island 30 Aug 1999 (R.W. Suomala), and 33 banded at Star Island 3–4 Sep 2000 (R.W. Suomala). Latest known records from the northern Connecticut River valley are 1 at Columbia 17 Oct 1993 (D. Killam) and at Monroe 14 Oct 1954 (P.D. Hunt). Latest known reports statewide are at Durham 13 Nov 1994 (C.A. Federer) and 1 at East Kingston 8 Nov 2005 (D.W. Finch). Last published reports for the year have mainly been from the coast and the Merrimack River valley.

FAMILY CORVIDAE

Gray Jay *Perisoreus canadensis*

Status. Uncommon permanent resident of the White Mountains and northern forests. A few move to lower elevations and southwards in fall. It was listed as a species of Special Concern by the New Hampshire Endangered Species Conference (Smith 1979) but is now no longer listed.

Early reports to 1950. Early ornithologists felt that this species only visited the state in winter but others thought it a rare resident. The earliest published reports for the state are that of W. Brewster at Lake Umbagog 1871–1909 (Griscom 1938), and it was considered common at Errol 3 Nov 1869 (Maynard 1871). Chickering (1875) reported it in the White Mountains; Chadbourne (1887) thought it regular above 3600 feet in the Presidential Range; and Howe (1901–1903) found it on Sandwich Dome in the summer of 1902. It was considered common in the White Mountains and northern parts of the state about 1900 (Goodhue 1922, Allen 1903, Forbush 1927). Wright (1911) considered it uncommon at 3000–4000 feet, and occasionally as low as 1500 feet, in the Presidential Range and in the Jefferson region.

Occasionally reported farther south and at lower elevations. The earliest such report is of 1 at Strafford in late fall (Palmer 1871). Dearborn (1898, 1903) provides casual records at Pittsfield and Hampton, 1 was taken at Penacook about 1890 (Allen 1903), 1 was seen at Raymond 28 Nov 1901 (F.A. Lovejoy), and 1 was shot at Newton 13 Feb 1904 (Allen 1913). One was seen at Broad Cove (L.J. Rundlett) near Concord (White 1924b). The first record for Cheshire County was a bird found recently dead at White Hill 30 Oct 1932 (Shelley 1933a, Bagg and Eliot 1937).



There was only a handful of reports in RNEB 1936–1949, all from the White Mountains or northward except for 1 at Canaan 10 Dec 1947 (A. McAlister). The above reports south of the White Mountains hint at the possibility of occasional incursions from the north which have even continued rarely into MA (Veit and Petersen 1993).

1950 to present. Essentially a permanent resident in parts of the White Mountains and in much of Coos County. Numbers reported fluctuate, but thorough censuses have not been made so the extent of population changes is not known. The population may have increased slightly as its favored deep forest habitat returned to areas that were cleared in 1750–1880 despite extensive harvesting of spruce and fir forest in the north country 1950s–1980s. A population increase appears to have occurred in the Jefferson region at Pondicherry Refuge where it has re-occupied part of what may have been its precolonial breeding range (Richards 2000). It has been found regularly since 1950 in the higher parts of the White Mountains and in the Pittsburg, Errol, and Lake Umbagog areas at all seasons, and often on CBCs. Population trend listed as unknown by Hunt (2012).

None have been found south of the White Mountains since 1980. The *Atlas of Breeding Birds* 1981–1986 found evidence of breeding in 12 priority atlas blocks, mainly in the higher mountains and northeast Coos County. In the 1990s up to 20 birds were found in many years in the usual areas at Errol, Pittsburg, and the White Mountains. Reported at the Second College Grant all year and believed to breed there beginning as early as February (Cohn-Haft 1995), though possibly this is no longer true (R.W. Suomala pers. comm.).

Occasionally birds wander south of their breeding range in fall, especially since 1957. In fall of 1957 about 20 birds were found south of the White Mountains. Several of these birds remained into winter and were still present early in the following spring. There were fewer reports in traditional areas in the 1960s, but fall wanderers were reported on the Coastal CBC in 1965 and at Wilton, Peterborough, Center Barnstead, and Merrimack early in 1966. In 1968 it was reported in late fall from Moultonborough and Lee. In 1969 it was reported in Newmarket, Loudon, and Shelburne, and that fall from Londonderry and East Concord.

In the 1970s counts were even lower in traditional areas, but Ridgely (1977) reported it at Moultonborough in Oct and Nov 1974 and also in 1975. Two were found in Wentworth by 16 Oct 1975 (H.M. Van Deusen; photo), as far south as Hollis 5 Nov 1975 (J.P. Smith), 1 was on the Laconia CBC in 1978. One was at Hancock 30 Oct and 4 Nov 1978 (H.M. Cadot), 2 found at Hancock 10 Apr 1989 (R. Luby), and 1 there as late as 10 May 1992 (E. and B. Burt *fide* H.M. Cadot). Curiously, Pittsburg CBC data unadjusted for party hours have shown a decline 1950s–

1980s followed by a recovery 20 years later; average for the 1950s was 5.1, 6.5 for the 1960s, 3.6 for the 1970s, 2.7 for the 1980s, 3.1 for the 1990s, and 6.3 for the 2000s. Since 2000, spring and summer reports have continued from the usual locations, typically in groups of 1–7 birds. Highest recent count was 9 on Mt. Pierce 15 Dec 2007 (D. Govatski *et al.*). Statewide CBC counts from 1996 to 2010 ranged from 3 to 43 with a mean of 10; the 43 count was in 2007, 17 of which were from Pittsburg. Statewide CBC count in 2009 was 32 with 22 at Pittsburg.

Blue Jay *Cyanocitta cristata*

Status. A common breeder below 2700 feet elevation but rare in montane coniferous forests. A fairly common spring and a very common fall migrant, and variably common winter resident. Less common north of the latitude of the White Mountains in winter.

Early reports to 1950. The first state report is that of Belknap (1792) who listed “Blue Jay, *Corvus cristatus*.” Early on it was considered more common in the southern parts of the state than in the north (Samuels 1867, Allen 1903), but W. Brewster found it a common summer resident and abundant seasonal migrant at Lake Umbagog 1871–1909 though scarce there in winter (Griscom 1938). Chickering (1875) reported it nesting in the White Mountains, J. Dwight collected his first of 5 specimens at Hollis 17 Apr 1876 (AMNH #371693), and Morrison (1883) found it in Windham. Most writers described it as most numerous south of the White Mountains and generally common in Webster (Goodhue 1877a), Belknap and Merrimack Counties (Dearborn 1898), Durham and the coastal region (Dearborn 1903), Dublin (Thayer 1912), the Jefferson region (Wright 1911), and Concord (White 1924b, 1937). Several of these authors also noted that it was often more numerous in winter, suggesting an influx of birds from the north, though winter numbers could also be variable. Marble (1907) only found it at Crawford Notch as a migrant in September. Wright (1911) noted a fall migratory flock of 100 birds 19 Sep 1908 at Jefferson but few were left by early Oct. It was felt to be uncommon around settlements until the end of the 19th century by which time it had adapted to civilization and began to be found in cities and nesting in backyards (Palmer 1949, Bent 1946).

The only reports to RNEB 1936–1949 were in winter from the White Mountains northward where it was scarce, from such locations as Whitefield, Pittsburg, Hanover, North Stratford, Pinkham Notch, Monroe, and Ossipee. A notable migration movement was 140 at New Hampton 24 Sep 1948 (V.H. Hebert).

1950 to present. While this species is present year-round, individual birds migrate both inland and along the coast during spring and fall. A common and statewide breeder

though listed as declining in hardwood and mixed forest by Hunt (2009b).

Spring. Some wintering birds are suspected of moving north in the last half of March. Inland high spring counts are typically smaller than those along the coast, and peak inland spring migration period is the last 3 weeks of May. High inland counts include 35 at Hillsborough 11 May 1985 (R.A. Sprague), 39 from New Hampton 4 May 1960 (R.C. and V.H. Hebert), 60 at Keene 11 May 2006 (J. Smith *et al.*), 70 in Plymouth 26 May 1976 (S.A. Fogleman), 86 in Canterbury 10 May 1994 (P.D. Hunt), 112 in Moultonborough 15 May 1966 (H.C. Anderson), and 163 in Londonderry 8 May 1971 (H.A. Reynolds). Migratory movement often continues until 10 June in the Lake Umbagog region (Griscom 1938), and banding reports confirm that birds wintering south of New Hampshire fly north to Canada in spring (Bent 1949). The elevation record for the state was 3 at 3800 feet in Tuckerman's Ravine 7 Mar 1969 (T. Richards).

A major part of spring coastal migration is thought to consist of birds heading to ME and maritime Canada. Peak coastal counts have been much higher than inland ones and tend to be later in May: 66 at the coast 24 May 1955 (ASNH field trip), 200 including "some coming in off the ocean" at Hampton 24 May 1961 (A.C. Borrer), 225 at Rye 26 May 1971 (E.W. Phinney), 356 at Seabrook 7 May and 121 on 18 May 2008 (S.R. and J. Mirick), 996 at Rye 24 May 1964 (R.C. and V.H. Hebert), and 2000 at Rye 21 May 1966 (R.C. and V.H. Hebert). Late migrants at Star Island were several there on 9 Jun 1969 (R.L. Holt) and 7 Jun 1970 (R.W. Smart). Some of these counts have occurred early in the day: 513 seen between 09:00–09:30 at Rye 10 May 1970 (V.H. Hebert *et al.*). Major spring coastal migrations do not occur every year and are probably dependent on weather conditions and low mast supplies the previous fall; there have been no extraordinary flights reported since 1985.

Summer and breeding. Egg dates of 14 May to 14 June were recorded during the *Atlas of Breeding Birds* 1981–1986 project (Foss 1994), indicating that some birds were already nesting well before others had passed through northward. The *Atlas of Breeding Birds* reported it breeding in every priority atlas block but 1, which was in a remote and high elevation area. New Hampshire BBS data show a small decline to an average population trend of about 1.2% per year in 1966–2009 and 1999–2009, about the same as for regional and national data (Appendix IV).

Fall. In contrast to the spring, inland fall flights often greatly exceed coastal ones and have included some of the highest counts ever recorded in New England. Early on, Forbush (1927) described 2 migration types for this species: "(1) regular southern movements in autumn or winter from the more northern parts of its range and re-

turn movements in spring to its breeding places; (2) irregular movements in autumn or winter from those parts of its range where food is scarce to those where it is abundant." It is believed that the largest fall flights are due to shortage of mast, primarily acorns and beechnuts. Two such years were 1957 and 1978. Palmer (1949) states that "[a]pparently migration depends not only on the age of the birds, adults being less migratory than birds of the year, but also on the mast crop."

Significant fall counts from the Connecticut River valley include 200 at Pittsburg 13 Sep 1961 (W.W. Kidder), 179 at Stewartstown 26 Sep 1974 (R.C. Hebert), 158 at Colebrook 28 Sep 1974 (R.C. Hebert), 225 at Whitefield 21 Sep 1974 (R.J. Bradley), and 150 at Lancaster 12 Sep 1999 (S.B. and M. Turner).

Numbers recorded in the Merrimack River valley are by far the highest known. Peak counts other than at New Hampton are 500 in Sandwich 9 Sep 1963 (H. Coolidge), "hundreds" in Squam Lake region 16 Sep 1983 (B.S. Ridgely), 300+ in Plymouth 22 Sep 1975 (S.A. Fogleman), 172 in Bristol 1 Oct 1972 (V.H. Hebert), 85 in Concord 21 Sep 1972 (J.B. Grant), 400+ in Bedford 13 Nov 1970 (W. Riehl). However, the counts made at New Hampton by R. C. and V. H. Hebert over a period of years are the largest of any: 3917 from 22 Aug to 7 Oct 1957, 6528 from 5–27 Sep 1963, 5600 from 7 Sep to 20 Oct 1965, 4000 on 24 Sep 1969, 3712 on 20 Sept 1970, 2164 on 18 Sep 1977, and 2205 on 25 Sep 1978. In all of New England there are only 4 other known one-day counts over 1000. In comparison, the highest known fall single-day count at the coast is 70 on 4 Oct 1964 (R.C. and V.H. Hebert).

Winter. CBCs provide the best data on winter distribution. Annual numbers vary, with some indication of an increase since 1980. The Nashua CBC is typical; it averaged 154 in the 1960s, 418 in the 1980s, 594 in the 1990s, and 611 in the 2000s. Statewide CBC totals 1996–2009 vary widely from 3189 to 7673 with a mean of 4020 and a slight upward trend in this period, probably due in part to an increase in party hours. Wintering numbers from the White Mountains northward also indicate a slight increase in the last 50 years.

Black-billed Magpie *Pica hudsonia*

Status. Very rare visitor from the west. Eight reports.

Records. Single birds at Franklin 16 Mar 1959 (Burleigh *et al.*), Plymouth 19–20 Mar 1959 (*vide* R.N. Lake), New Hampton 22–23 Mar 1959 (S. Moulton *et al.*), Dover 2 Apr 1959 (Morrow), Lyme 20 Jan to 10 Feb 1969 (R. Ricard), Lyme 15–17 Oct 1962 (C. Wellman *et al.*), Piermont 4 Nov 1966 (A. Campbell), and Plymouth 20–24 Apr 1981 (J. and C. Perkins).

Remarks. This species is resident from southern Alaska

to central California and east from there to western Ontario and western Oklahoma and is known to have wandered to the Atlantic states on many occasions. Historically, most records in the east have been deemed to be escapes or released: 5 were released at Crawford, New Jersey, between 16 Aug and 20 Nov 1952, and 7 birds were released in Woodstock, VT, 15 Aug 1954 (Fillebrown 1954). There are other eastern records from New Brunswick (Packard 1955a, 1955b), ME (3 records in 1955), MA, Connecticut, New York, and New Jersey. But in 1959–1961 alone there were 12 records in MA, a period when it was also recorded well east of its normal range in Ohio, Tennessee, North Carolina, and New York (Veit and Petersen 1993, Bull 1974). The present authors feel that the 4 New Hampshire 1959 records are properly considered part of this documented influx of western birds at this time, but express no opinion about the provenance of the 1962, 1966, 1969, and 1981 reports. Two records considered hypothetical for ME (ME-BRC website, P.D. Vickery pers. comm.).

American Crow *Corvus brachyrhynchos*

Status. A common and widespread resident south of the mountains, less so north of there. A common migrant and increasingly common breeder. Locally abundant in winter at roost sites.

Early reports to 1950. First listed Belknap (1792) as the “Crow, *Corvus corax*,” using the scientific name now applied to the Common Raven. Probably became more common as land was cleared 1750–1900 (Forbush 1927, Palmer 1949, Bent 1946). In the 1800s it was reported from Temple (Blood 1860), Windham (Morrison 1883), Swanzey (Read 1892), and Hampton where 1 hunter shot 148 in 1857–1890 (Dow 1893). Goodhue (1877a) thought it a common breeder and migrant at Webster but scarce there in winter. Brewster found it a common to occasionally abundant spring and fall migrant at Lake Umbagog 1871–1909 but absent from there in winter (Griscom 1938). Virtually all other early writers described it similarly, peak periods of migration being March in spring and October in fall, the numbers present in winter being much greater south of the White Mountains, especially near the coast and at the southern ends of the 2 major river valleys. Several writers have reported its tendency for many to collect in roosts at night.

Records published in RNEB 1936–1949 focused on scarce wintering birds from November to February in the White Mountains and northward and significant migration dates and counts: first migrants of spring at Hanover 22 Feb 1939 (R.L. Weaver) and 23 Feb 1944 (D.E. Wade), “thousands” moving south at Monroe 8 Oct 1945 (R.B. Emery), and 1000+ at New Hampton 22–23 Oct 1948 (J. Fogg). The elevation record for the state is of 2 birds fly-

ing over the summit of Mt. Washington (6300+ feet) on 28 Jun 1944 (D.E. Wade).

Bent (1946) reported that banding operations on Cape Cod, MA, suggest that there are 3 populations of crows—permanent residents, breeding birds that winter to the south, and northern breeders that either winter in or migrate through the region. While crows migrate long distances in the midwestern United States, in the northeast they tend to move 100 miles or less; this pattern may very well apply to birds found in New Hampshire (Bent *op. cit.*).

1950 to present. Essentially a permanent resident with some northward spring migration that increases the number of breeding birds, and a large inland fall migration with large numbers of birds gathering in winter roosts, especially in southern parts of the state. Several writers feel that its population remained stable 1950–1975, increasing somewhat 1975–1986 (Foss 1994) and it has grown moderately since. The impact of the occurrence of West Nile virus and its aftereffects may have been significant but has not been documented for New Hampshire.

Spring. One of the earliest landbird migrants; migration activity has been noted from mid-February through March, often to mid-April, especially in the north. Concentrations have been recorded in both major river valleys and in the coastal region. Typical high counts are in the 200–250 range: exceptions 300+ in southwest New Hampshire 26 Mar 1962 (A.R. Keith), 350 in 20 minutes at Dover 24 Feb 1985 (P.E. Keenan), 350 at Dover 5 Mar 1991 (S.R. Mirick), 350 at Monroe 25 Feb 1989 (R.J. Bradley), 400 at Keene 11 Mar 1979 (J.H. Ward), and 800 at Portsmouth 16 Mar 1997 (S.R. Mirick).

Summer and breeding. An early nesting record is 1 in Manchester 30 Apr 1979 (M.T. Martin). The *Atlas of Breeding Birds* 1981–1986 recorded nesting in 89% of all priority atlas blocks with only 3 priority blocks missing south of the White Mountains but more missing at higher elevations and north of the mountains. The regional picture shows a slight increase in the northeastern United States 1966–1979 (Robbins *et al.* 1986), and New Hampshire BBS population trend data show a small increase averaging about 1.7% per year in both 1966–2009 and 1999–2009 (Appendix IV). In some areas where agriculture has declined and reforestation has occurred, crows appear to have become less numerous, as in the Squam Lake region (Ridgely 1988). Breeding population in hardwood and mixed forest listed as increasing by Hunt (2009b).

Fall. Birds begin flocking in late summer; this is followed by southward daytime movement. Selected high counts have been 500 in the Connecticut Valley flyway at Monroe 21 Oct 1969 (E.A. Emery), for the Merrimack River

valley 450 at Concord 25 Oct 2009 (P.D. Hunt), and for the coast 500 at Durham 20 Oct 2009 (S. Young). In mid-November, reports can be of both migrating flocks and nighttime roosts. Examples of migrant flocks are 48 at Londonderry and 70 at Derry 15 Nov 1975 (D.M. MacRae), and 35 at New Hampton 19 Nov 1964 (R.C. and V.H. Hebert). A record of 7000 at Manchester 24 Oct 1969 (W.C. Chisholm) was at a nighttime roost as was 600+ at Greenland 23 Nov 1969 (R.W. Smart).

Winter. At some locations in the interior, such as the Sandwich area, it becomes scarce or absent altogether at this season (R.S. Ridgely pers. comm.). Statewide CBC totals 1996–2009 ranged from 5136 to 17,141 with a mean of 7128 and no real trend. The 2001 CBC which totalled 17,141 included high counts of 5677 in Nashua and 4901 at Manchester, both including several evening roosts. After December, high winter reports include 1000 at Concord at a roost 16 Jan 1998 (S.R. Mirick), 1000 flying to a Manchester roost 26 Feb 2004 (I.C. MacLeod), and 604 at a coastal roost 2 Jan 1966 (E.W. Phinney).

Fish Crow *Corvus ossifragus*

Status. An uncommon but increasing summer resident and a rare breeding species. Earlier reports came from near the coast and Merrimack River valley but recently some reports have come from farther north.

Early reports to 1950. Scott (1921) states that it occasionally occurred near salt water at Durham in spring and summer, but there never was contemporaneous confirmation of this statement.

1950 to present. The first state record was at Kingston State Park 2 Apr to 1 May 1971 (D.W. Finch *et al.*). A pair was seen building a nest at Durham 18 Jun 1982 for the first documented nesting in New Hampshire (M. Davis; H.P. Nevers *in* Foss 1994). Numbers in the state increased significantly 1990–2009 and a few may now overwinter. The pattern of colonization is very similar to that which took place in MA 1950–2000: first appearing along the coast, then in inland river valleys, and then wintering in American Crow roosts (Veit and Petersen 1993).

Spring. Peak migration period is late March to mid-April with the first birds reported in the last week of March. Earliest probable migrant records are 16 at Salem 4 Mar 2004 (M.G. Harvey), 8 at Kingston 19 Mar 1988 (M.J. Murray, M. Davis, *et al.*) and 1 as far north as Concord 20 Mar 2004 (R.A. Woodward). Spring reports occur through mid-April and are from southeastern areas such as Durham and Kingston and in the Merrimack valley from Nashua, Concord, and more recently Laconia 24 Mar 2003 (L. Bardush *et al.*); Canterbury 15 Apr 2000 (R.A. Quinn); and Plymouth 8 May 2000 (W. Taffe *et al.*). To date there are fewer reports from the lower Connecticut River valley; 1 at Hinsdale 1 May 2009 (E.A. Master-

son) but a few more since. High counts include 13 at Auburn 24 Apr 2004 (I.C. MacLeod), 10 at Rochester 8 Apr 1989 (S.R. Mirick), and 10 at Hooksett 22 Mar 2008 (R.W. Suomala).

Summer and breeding. Birds are present all summer, primarily in the Merrimack River valley and especially near Concord. During the *Atlas of Breeding Birds* project 1981–1986, birds were found in Dover, Hooksett, Manchester, Kingston, and Concord, as well as the nest in Durham. Recent high counts include 7 at Concord 19 Jun 2005 (R.A. Woodward), 6 at Dover 7 Jun 1996 (P.D. Hunt), and 6 at Rochester 12 Aug 2004 (S.R. Mirick). It only became regular in the Hampton/Seabrook area 2008 to date (*fide* R.A. Quinn). It has been slowly colonizing northward in New Hampshire since 1990, the northernmost regular location to date being West Ossipee on 22 Jul 2006 (A.J. Vazzano), where it is regularly found from April to early October (R.S. Ridgely pers. comm.). Breeding population listed as increasing by Hunt (2009b).

Fall. Most reports at this season come from southern locations, in the Merrimack River valley even as far north as Concord, and a few at the coast. Available high counts which possibly indicate migratory movement include at least 19 at Concord 4 Sep 2007 (R.A. Quinn), 10 there 29 Sep 2006 (S.R. Mirick), and 8 at Manchester 14 Sep 1999 (R. Andrews).

Winter. An unusual late inland record was 1 at Concord 27 Dec 2009 (J. Pietrzak). Most reports at this season are from or near crow roosts at such locations as Salem and Durham; examples include Durham 21 Feb 1994 (M. Davis), 2 at Salem 6 Jan 2005 (R.P. and D.D. Fox), 3 at Hampton 27 Jan 2007 (T. Bronson *et al.*), 5 at Salem 12 Jan 2008 (T. Bronson), and 1 at Kingston 26 Feb 2007 (S.R. Mirick) which could have been a very early migrant.

Common Raven *Corvus corax*

Status. A fairly common permanent resident at higher elevations and in the northern forest. It has extended its range southward, especially in the uplands, since the 1950s, reoccupying what was probably its range in pre-colonial times.

Early reports to 1950. This species was apparently widespread and numerous in both the adjoining states of MA and ME in the 1600s and early 1700s until it began to be systematically persecuted by settlers who accused it of damaging livestock, primarily sheep and chickens (Forbush 1927, Palmer 1949, Veit and Petersen 1993). Though there is no documentation from this era and it is missing from Belknap's (1792) list, there is no reason to believe that it was not equally widespread in New Hampshire in the 1700s. Richards (2000) estimates that it was eliminated from northern New Hampshire "probably during the sheep-farming period of the 1830s and '40s," and W.

Brewster was told in the 1870s by “[e]arly settlers” of the Lake Umbagog region that it had “occurred much more commonly in the days of their youth” (Griscom 1938). Coues (1868) thought it only a very rare resident. The earliest documented New Hampshire records are of 1 taken and another seen at Sutton 20 Dec 1879 (Goodhue 1885) and 1 caught in a trap at Warner about 18 Feb 1879 (Harriman 1870). Brewster only found it twice at Lake Umbagog 1871–1909, in 1883 and 1888, both in October and both in New Hampshire (Griscom 1938). One was trapped “in early spring” at Canterbury about 1890 (Dearborn 1898) and 1 was killed in Greenville about the same time (Allen 1903). It was not believed to be breeding in New Hampshire by Allen (1903) or Wright (1911). In ME numbers began to increase 1935–1945 (Palmer 1949).

1950 to present. It has been expanding into its presumed precolonial range from the north, first high in the mountains, then into lower elevations and southward. There are no known published records for New Hampshire from 1900 until 1 or more were recorded on Mt. Madison 20 Aug 1956 (A. Lincoln, E. Steele). Listed as increasing by Hunt (2009b).

Spring. The first report of a return by this species is, “[s]ince 1956 I have seen ravens nearly every spring in the Connecticut Lakes Region,” and 1 was heard in Franconia Notch in Mar 1962 (NHAQ 16 (4): 117; H.C. McDade); 2 were seen in Franconia Notch 16 Mar 1963 (A. Lincoln). One was migrating with crows at North Stratford 7 Mar 1965 (G.S. Keith); south of the mountains 1 was seen and heard at Barrington 8 Mar 1970 (V.H. Hebert) and another was in Albany 20 Mar 1970 (A. Lincoln). In 1951–1960 there were over 30 published reports of ravens from May to January, including 1 on the Pittsburg CBC; most reports were from Pittsburg but 2 were as far south as New Hampton and Ossipee. In 1961–1970, numbers of reports increased, with most reports south through the Presidential Range. The first high counts were 31+ at Errol 22 Feb 1963 (T. Richards) and 37 on the Pittsburg CBC 30 Dec 1970 (D.W. Finch). Reports continued of birds in family groups or in pairs 1970–1975 but breeding was yet to be proved. Reports in this period south of the mountains came from Charlestown 2 May 1971 (W.W. Kidder) and from Intervale, Center Harbor, East Alton, Durham, Loudon, New London, and Dunbarton (L. Kilham and C. Foss *in* Foss 1994). Aggregations in late April (near the beginning of nesting season) possibly indicating migratory movement include 11 at Monroe 22 Apr 1988 (S.B. Turner *et al.*), 45 at Rindge 27 Apr 1989 (D. Rowell), and 37 at Lyman 27 May 1990 (R.J. Bradley).

Summer and breeding. The first known nest in New Hampshire since 1900 was found on a cliff in Wentworth in Mar 1976; it contained 5 eggs on 4 Apr and 3 young

on 15 May (H.M. Van Deusen). Since that time, most nests have been found in trees. A nest containing 4 nearly-fledged young was found in Alstead 21 May 1977 (S.R. Sturup). In the 10 years since the first nest was found, the *Atlas of Breeding Birds* project 1981–1986 found evidence of breeding in 50% of all priority atlas blocks. The “confirmed” blocks included much of the Western Highlands, some of the Merrimack River valley and the Eastern Uplands; confirmed breeding was established in all 3 of the southernmost counties. Increase in range and numbers of birds continued in the 1990s and into the 21st century. New Hampshire BBS population trend data show a significant increase averaging about 5.4% per year in 1966–2009 and 1999–2009 (Appendix IV). Reports of postbreeding roosts were 27 birds at Bethlehem 3 Aug 1982 and 94 there 30 Jul 1985 (R.J. Bradley).

Fall. Southward movement has been noted in the southern part of the state from early September into October: 22 at Farmington 9 Sep 1993 (S.R. Mirick); 23 at Peterborough 13 Sep 1997 (S.R. Mirick); “11 passing south at 3,500–4,000 ” feet on Mt. Cardigan 3 Oct 1978 (T. Richards); 17 migrating at Mt. Osceola 6 Oct 1980 (B.S. Ridgely); 45 at Pack Monadnock in Peterborough 25 Oct 2007 (L. Tanino); 50 at Robbins Ridge, Chatham, 18 Oct 2009; and 60 there 22 Nov 2009 (both B. Crowley).

Winter. Peak numbers are noted on CBC reports. Total statewide counts 1990–2009 range from 129 in 2000 to 553 in 2005, mean being 219, but with great variation. Many more districts in the south reported it as this period progressed. Availability of food probably accounts for concentrations of ravens and the great variations in counts between districts on given years.

FAMILY ALAUDIDAE

Horned Lark *Eremophila alpestris*

Status. A very local breeding species, a regular winter visitant, and a regular spring and fall migrant. Two races are commonly found and a third race is hypothetically reported and is certainly very rare. Each race is considered separately; many early reports did not distinguish between races though several pre-1950 writers made careful distinctions, but little or no effort has been made to distinguish subspecies in recent years by most observers. The following is based on over 500 published reports since 1950 of which 143 were specifically reported to be of the Prairie race and 140 of the Northern race; the rest of the published reports have been ignored and there is no way to be sure that both old and recent reports identifying specific races have been rigorously identified so they have had to be taken at face value. The authors rec-

ognize that in many cases subspecies cannot be distinguished with certainty, especially when the birds are young or in worn plumage. Usually found in short grass field habitat but occasionally on mountains in migration.

Northern Horned Lark *E. alpestris alpestris*

Early reports to 1950. Breeds in arctic northeastern Canada to Newfoundland, winters to coastal southeastern United States and is a migrant and common winter resident in New England (Bent 1942, Forbush 1927). Belknap (1792) includes the “Sky Lark, *Alauda alpestris*,” which probably belongs here since the Prairie race likely had not begun to occur as far east as New Hampshire at that time. The first documented state record appears to be 1 collected by W. Brewster at Lake Umbagog 25 Sep 1896 (Griscom 1938), his only certain record there. A specific report of 50 birds of this race was from Jefferson on 7 Oct 1904 (Wright 1911). Allen (1903) thought it a “common spring and fall migrant and less common winter resident along the coast but uncommon, if not rare inland,” and saw northbound flocks at Seabrook 26 Mar 1900. Dearborn’s (1903) dates from the coastal region were late October to late December and March and April. White’s (1924b, 1937) dates at Concord were 13 October to 12 November and 17–30 March; he collected 1 at Concord 2 Mar 1921 (MCZ #293378) and saw a laggard there 7 May 1926. Palmer (1949) and Griscom and Snyder (1955) both commented it was most numerous as a coastal migrant in both spring and fall.

Reports published in RNEB 1936–1949 provide an early fall date of 13 Oct 1946 inland at Monroe (I.F. Hunt) but few records until presumed northbound birds inland at Hanover 23 Feb 1941 (E.W. Goodhue), with a peak count of 25 there 11 Mar 1941 and the latest 1 there 15 Mar 1941 (both E. Haskins).

1950 to present. Notable increase in numbers reported.

Fall. Migration of this race is from mid-September at least to late November, occasionally early December. Peak numbers are usually found in November, sometimes inland but mainly on the coast. Representative inland early migrant dates are several at New Hampton 16 Sep 1961 (R.W. Smart, V.H. Hebert), on Mt. Kearsarge in Merrimack County 17 Sep 1962 (K.C. Elkins), at New Hampton 22 Sept 1954 (V.H. Hebert), 10 at the Mt. Monadnock summit 25 Sep 1955 (T. Richards), 18 on Mt. Washington 26 Sept 1963 and 35 on Mt. Jefferson 15 Oct 1961 (R.P. Fox *et al.*), and 12 at Errol 17 Oct 1964 (A.R. Keith). Inland high counts are 264 at Colebrook 24 Sep 1976 (V.H. Hebert), 300 at East Conway 4 Nov 2007 (A.J. Vazzano), and 300 at Concord 12 Nov 1998 (R.W. Suomala). High coastal counts are 125 on 2 Nov 1966 (L.G. Phinney), 150 on 17 Nov 1967 (L.G. Phinney), 200 on 11 Nov 1961 (R.J. Bradley), and 220 on 30 Oct 1960 (R.W.

Smart). Offshore, 4 were seen flying over the ocean near Jeffreys Ledge 16 Nov 1975 (ASNH field trip). Occasionally, mixed flocks with the Prairie race have been found.

Winter. Reports outside of the CBC period have ranged from 15 to 75 with the exception of an unprecedented 750 at Westmoreland 25 Feb 2007 (D. Clark), possibly including more than 1 race. CBC totals have usually been much higher than counts outside the CBC period. Inland it was recorded on the Concord CBC for the first time on 21 Dec 1980 but 207 were found on the 15 Dec 1994 CBC there. The Coastal CBC usually has the highest counts, typically averaging 40% of the state total. In 1950–1959 the Coastal CBC averaged 27, in 1960–1969 it averaged 116, in 1970–1979 it averaged 119, in 1980–1989 it averaged 157, in 1990–1999 it averaged 83, and in 2000–2009 it averaged 73. The second highest winter counts ever made were on the Coastal CBC: 308 on 21 Dec 1969 and 349 on 19 Dec 1992. Its numbers vary greatly from year to year both in state totals and totals per district.

Spring. Presumed northbound birds have been reported from early March to late April. Most large flocks have been found to be this race though rarely a few of the Prairie race can be present. Examples including high counts are 250 at Walpole 1 Mar 2008 (E.A. Masterson), 200 at Monroe 2 Mar 1972 (M.L. Fuller), 115 at Hampton 8 Mar 2006 (J. O’Shaughnessy), 250 at Durham 24 Mar 2008 (S. Young), 150 at Boscawen 12 Apr 2008 (R.A. Quinn), and 200 at Walpole 14 Apr 2007 (E.A. Masterson). Late spring reports are “definitely all northern[s]” at New Hampton: 7 on 25 Apr 1961 and 2 on 27 Apr 1961 (both R.W. Smart, V.H. Hebert). No summer reports.

Prairie Horned Lark *E. alpestris praticola*

Early reports to 1950. This race was split from the nominate race in 1884 (Bent 1942). Originally described from the midwest; as fields were cleared in the northeast after 1800, it expanded its range eastward to VT by 1889, Connecticut in 1891, and to MA by 1892 (Forbush 1927). First reported for New Hampshire by Faxon (Faxon 1892, Faxon and Hoffmann 1900) when adults and young were found at Franconia 4 Jun to 21 Jul 1891. Torrey (1901) stated at least 9 birds were present in the same area in May 1901. Wright (1911) found 2 at Lancaster 7 Aug 1899. Allen (1903) reported a “small flock” seen at Jefferson in a ploughed field in the summer of 1900 (M.V. Blandy), pairs including young of the year were found at Lancaster about the same time (F.B. Spaulding), and 1 was collected at Randolph 6 Mar 1902 (V.D. Lowe). Goodhue (1922) found 1 at Boscawen 25 Jun 1901, discovered a nest there in 1902, and saw a flock of 50 there in early fall 1903. A nest with 2 newly hatched young was found 22 Jun 1903 in Errol (Allen 1903, Griscom 1938). Wright (1911) saw 42 adults and immatures in 3 flocks 13 Jul 1903 in Jefferson and found birds on the grounds

of the Mt. Washington Hotel 1905–1911. One was collected at Bretton Woods by F. B. McKechnie (MCZ #182724). Adults carrying food were seen on Mt. Washington above treeline 7–16 Jul 1905 (Torrey 1905). Marble (1907) found 1 in Crawford Notch 5 Jul 1907 and noted it was breeding in Bretton Woods. White's (1937) earliest spring record at Concord was 1 on 7 Mar 1928 and a nest with 3 young was found 10 Mar 1936. Forbush (1927) considered it an “uncommon to rare migrant and uncommon summer resident, though sometimes not uncommon locally in the White Mountain region and north.”

Reports published in RNEB 1936–1949 include early spring arrival dates of 19 Feb 1949 at Monroe (R.B. Emery) and 20 Feb 1949 at Concord (G.P. Baker), though usual early arrival was the first week of March, as far north as Whitefield by 2 Mar 1942 (D.J. Lennox). Nesting season reports came from Hanover, Monroe, and Hampton. Mixed flocks of this and the Northern race were noted regularly in both spring and fall peak migration seasons. In summary, this form quickly occupied favorable habitat nearly statewide from the 1890s through the 1940s from the lowlands to the mountains.

1950 to present. The only form that breeds in the state. Population trend listed as decreasing by Hunt (2012). A species of special concern in New Hampshire.

Spring. Based on 143 records of this race, spring migration dates span the period from 21 February to mid-April. First arrival locations have been generally in central and northern parts of the state: 10 reports from Concord and reports from Littleton and Pittsburg, with a few from Durham and the coast. An unusual report was of 1 singing on an exposed rock atop Wildcat ski area in Gorham 22 Feb 1961 (R.P. Fox). Peak migration time for this race differs little from that of the Northern race with a peak in March. High counts of Prairies are 75 in Lyme 23 Feb 1961 (F. Bowes) and 200 at Monroe 2 Mar 1972 (M.L. Fuller). Both races have been seen migrating together: Northern and 6 Prairies at Hampton 21 Mar 1959 (R.C. and V.H. Hebert).

Summer and breeding. There are at least 32 breeding records since 1950 scattered across the state from the coastal area and Nashua to Whitefield. Specific examples include 1 adult and 1 young at Concord 8–22 Jun 1958 (H.B. Miller), 2 juveniles at Concord 29 May 1960 (H.B. Miller), 1 juvenile at Seabrook 20 Apr 1966 (D.W. Finch), and a fledged juvenile there 18 May 1986 (R.A. Quinn). Breeding could occur from early April to mid-July, and more than 1 brood is possible (Palmer 1949, Forbush 1927). The *Atlas of Breeding Birds* project 1981–1986 found breeding in only 5 priority atlas blocks, 3 confirmed and 2 probable, all in the southeastern part of the state. As reforestation has progressed since 1950, its

breeding range has contracted and is little changed since the 1980s (WAP 2005). Most breeding records in recent years have been at airports (R.W. Suomala pers. comm.).

Fall and winter. Fall migration of this race ranges from early August into October with most reports in September. Reports have come from all over the state. These include at the coast 12 Sept 1959 (ASNH field trip), 3 of the Prairie form and 18 Northern form birds near Concord on 26 Sept 1963 (ASNH field trip), and on Mt. Washington at 5800 feet 26 Sep 1963 (H.C. McDade). In Jefferson, 20 September was a normal date of departure with extreme dates in early October (Wright 1911). A late record was several at Hampton Beach 4–20 Oct 1953 (G.P. Baker). The only specific winter record published is the 9 Feb 1961 record mentioned below.

Hoyt's Horned Lark *E. alpestris hoyti*

Early reports to 1950. Hypothetical. Probably only a very rare late winter visitor. First described in 1896, this form breeds in arctic Canada from Hudson Bay to the Mackenzie River and winters south to the northern United States, primarily in the midwest. It is known to interbreed with the Prairie race where their ranges overlap and intergrades have been found (Bent 1942). It is as large as or larger than the Northern race and is slightly grayer but has a white eyebrow as conspicuous as that of the Prairie race which is smaller than the Northern form. Considered an irregular winter visitant late January to early March in MA where 7 specimens have been collected (Griscom and Snyder 1955). Five specimens from Connecticut (Sage *et al.* 1913, Zeranski and Baptist 1990).

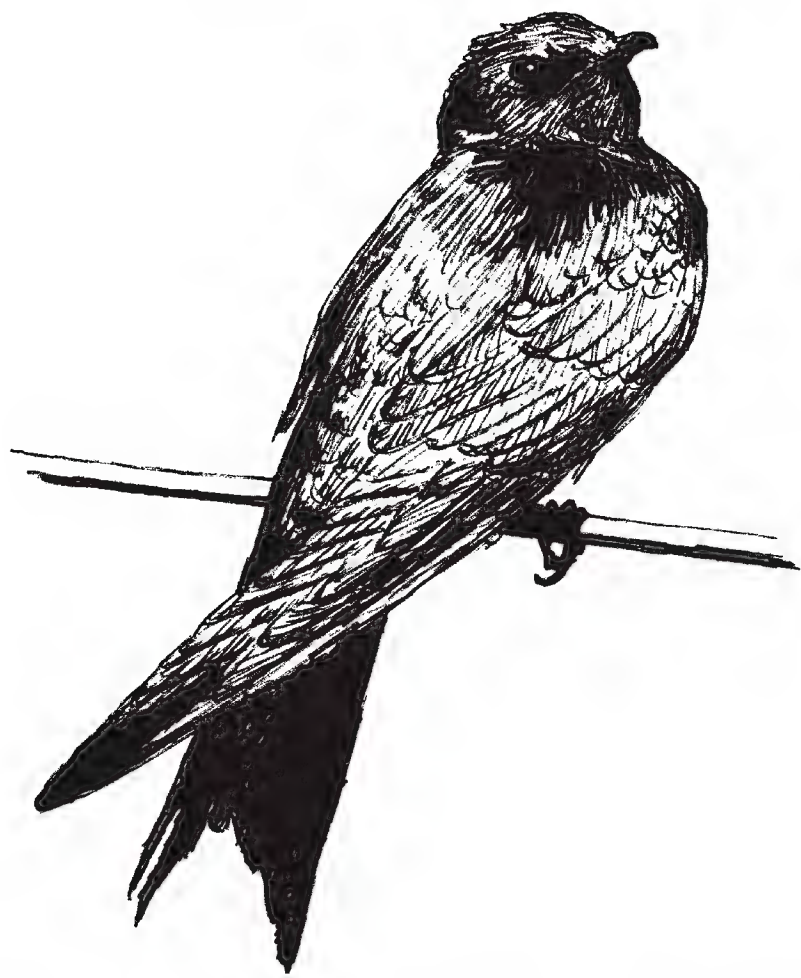
1950 to present. A flock containing 19 Northern, 5 larger “white-browed” birds, and 2 smaller Prairie forms was at Charlestown 9 Feb 1961 (R.W. Smart, V.H. Hebert). The large “white-browed” birds were possibly of this race. A specimen is desired.

FAMILY HIRUNDINIDAE

Purple Martin *Progne subis*

Status. A relatively common colonial breeding species in favored locations in the 1800s, it has become rare and endangered by the end of the 1900s and its future in New Hampshire has to be viewed as uncertain. Described as Threatened by the New Hampshire Endangered Species Conference (Smith 1979) and considered a species of Special Concern 2009–2012.

Early reports to 1950. First recorded for the state by Belknap (1792) as the “Black Martin, *Hirundo purpurea*,” at a time when it was probably not very numerous. First



recorded in Connecticut in 1765 and in ME in 1787. It moved into New England in colonial times and became a fairly common breeding bird through most of the 1800s (Howe and Allen 1901, Forbush 1929). A colony was at Enfield in 1846 (*fide* R.L. Weaver) and noted in Hollis 28 Apr 1875 (Fox 1876). Goodhue (1877a) thought it uncommon but said it nested at Webster. J. Dwight collected 1 at Wolfeboro 4 Sep 1879 (AMNH #371499). W. Brewster found it breeding at Lake Umbagog and at Colebrook and said it increased in that area 1881–1896 but then declined 1903–1908 as the House Sparrow population there increased the competition for man-made nest sites. It was breeding in Colebrook in 1896 (Faxon 1897) and was reported from the Isles of Shoals (Thaxter 1894). Dearborn (1898) thought it generally distributed in Belknap and Merrimack Counties, local in the coastal region in (1903) and present in Northfield (1905). Howe (1901–1903) thought it uncommon in the Bridgewater area but breeding in Plymouth. Thayer (1912) noted colonies at Hancock and Marlborough but said it was rare at Dublin. Wright (1911) recorded colonies at Lancaster, Whitefield, and Berlin; he saw migrants at Randolph 13 Aug 1909 and his latest in fall was 1 at Lancaster 2 Sep 1909.

Prolonged late spring rains accompanied by atypically cold weather have caused widespread mortality of martins both migrating and at nesting sites. In New England such weather conditions with subsequent loss of martins occurred in 1823, 1851, 1864, 1914, and especially in 1903 (Foss 1994, Brown 1997). This species was “virtually exterminated” from much of New England in Jun 1903 (Griscom and Snyder 1955), though much of ME and perhaps parts of northern New Hampshire appear to

have been less impacted than areas farther south (Palmer 1949). Foss (1994) believes that the New Hampshire population never fully recovered from the 1903 disaster. White (1937) described it as formerly common with a large colony at Concord in the 1890s (Torrey 1900) but only found it there in 1900, 1901, 1934, and 1936 after that. Allen (1903) felt it had been slowly declining as a breeding species for some time. However, in 1920 a migrant flock of unprecedented numbers was found (*fide* J.B. May): “thousands” at Lakeport between Paugus and Opechee Bays (Foster 1950). Sandborn (1921) reported 10,500 seen near Lake Winnisquam 27 Aug 1920, 20,000 there 29 Aug 1920, 30,000 there 30 Aug 1920 but none left there 1 Sep 1920. Foster and Sandborn probably both refer to the same migrant flock, probably a most unusual one-time event. The species had completely disappeared from the Lake Umbagog region by 1930–1936 (G.L. Perry in Griscom 1938).

Reports published in RNEB 1936–1949 include extreme early spring arrival at Enfield 1 Apr 1939 (R.L. Weaver), usual general arrival from mid-April to early May, general departure from breeding sites in the last 2 weeks of August, and latest in fall on 17 Sep 1949 at Laconia (P. Shepard). Northernmost report was 1 at Pittsburg 1 Jun 1949 (F.T. Scott). Breeding colonies were noted at Effingham, Newport, Woodman, Epsom, West Ossipee, and at Enfield where the colony was recorded continuously from 1846 at least to 1946 (R.L. Weaver). Hebert (1960b) reports 17 colonies in the southern part of the state in 1920–1921 and 22 colonies in approximately the same area in 1959–1960, only 5 of which were the same; colony losses were attributed to House Sparrows, European Starlings, and wasps.

1950 to present. Still in long-term decline, both locally and nationally. Population trend listed as decreasing by Hunt (2012).

Spring. Peak migration period is typically the last 2 weeks of April and the first week of May. Earliest arrivals are 3 Apr 1977 at New Durham and 6 Apr 1966 at Hopkinton (both E.W. Phinney). During a late cold and rainy period 20–25 May 1974, about 50–100 were found in a huge flock of feeding swallows at Squam Lake (R.S. Ridgely pers. comm.). Presumed late migrants have been at Star Island 24 May 1999 (R.W. Suomala *et al.*) and White and Seavey Islands 28 May 2002 (D. Hayward *et al.*), and on the mainland coast at Rye 26 May 2010 (S.R. Mirick) and New Castle 30 May 2010 (S.R. and J. Mirick). Cohn-Haft (1995) had only 1 report at the Second College Grant on 26 Apr 1980.

Summer and breeding. Birds are typically present at breeding colonies from mid-May to the third week of August. In 1950–2000, 58 localities south of the White Mountains (primarily in Carroll and Merrimack Counties) reported 1 or more colonies. Colonies often grow,

only to decline subsequently, possibly due to winter mortality, failure of the nesting structures to be maintained, changes in the surrounding environment as meadows grow up into woodland, or failure of the birds to return to where they were hatched. Several colonies active from 1950 for several years thereafter which were gone in 2009 are those at Moultonboro, Sandwich, and Ossipee; those that have declined significantly in the same period are those at Effingham, Freedom, and Meredith. The exact numbers present even at large colonies have seldom been reported, but some with more than 40 birds include 46 at Tilton in 1961; 20+ pairs at Gilmartin Iron Works in Jun 1964; 49 at Weirs Beach, Laconia in 1979; 50 at Freedom 1 Aug. 1990; 50 at Alton on 13 Aug 1983 and on 24 Aug 1960; 50–60 at Hopkinton 15 May 1964; 25–30 pairs at Contoocook in 1975; 300+ at Manchester 27 May 1968; and 50 pairs at Effingham in 1972. Since 2000 some high counts include 50 at Laconia 17 Jul 2005, 40 at Conway in summer 2003, and 30 at Laconia 18 Jul 2008 (all P.D. Hunt). As of 2009, only 3 active colonies are known in Freedom, Laconia, and Conway.

Prolonged cold and/or rainy weather during breeding, especially early in the season, can kill many adults in a colony as well as prevent young from hatching. In Jun 1959 such weather caused the loss of 3 colonies in Sandwich; 60 birds were found dead in Wolfeboro and 30–40 in Springfield (Hebert 1959, 1960b). Published records note an overall decline by 1963–1964 after which many colonies decreased in size. A general decline in the northeast began by 1980 but was not reflected as much in New Hampshire since a decline had already been underway there for some time (Brown 1997). The *Atlas of Breeding Birds* project 1981–1986 reported breeding in 13 priority atlas blocks, mostly in Merrimack, Belknap, and Carroll Counties. New Hampshire BBSs at this time detected martins on 15 out of 22 routes in the state but regularly on only 1. New Hampshire BBS population trend data show a very surprising increase averaging about 1.7% per year in 1966–2009 and 1999–2009 despite well-documented long-term declines, suggesting this data should be viewed with suspicion (Appendix IV). Absoute BBS counts show a sharp drop on the 22 routes from an average of 5.0 per year 1966–1975, increasing to 6.1 per year 1976–1985, then falling to 1.0 per year 1986–1995. Brown (1997) reports that an average of 2.3% of breeding adults disappear during nesting and that only about 5% of young return to their natal colonies; this may explain why some colonies decrease and new ones appear in subsequent years. A long-term decline is reported in WAP (2005) together with excellent historical distribution maps.

Fall. Following breeding, birds often disperse from nest sites, gather in evening flocks and eventually leave as a group with only a few lingering individuals. Sometimes

a whole colony leaves on a single day. Early departures have occurred as soon as mid-July with usual departures in mid-August: Alton 18 Aug 1984 (E.G. Lambert). Migrants have been reported from Star Island 24 Aug 1979 (J. Ginaven), 15 and 24 Aug 2000 (R.W. and M. Suomala), and 1 Sep 2003 (R.W. Suomala). Most have gone by early September; latest reports include New Durham 15 Sep 1965 (R.W. Smart), Charlestown 15 Sep 1973 (G.L. Kidder), Charlestown 21 Sep 1975 (W.W. Kidder), and a surprising 65 at Manchester 22 Sep 1979 (M. Tuttle).

Tree Swallow *Tachycineta bicolor*

Status. Common spring and very common fall migrant, and a locally common breeding species that became more common in the 20th century but has declined since the 1990s. Population trend listed as decreasing by Hunt (2012).

Early reports to 1950. The “Small Martin, *Hirundo urtica*,” of Belknap’s list (1812) probably belongs here, being similar in appearance to the Common House-Martin *Delichon urbicum* of Europe whose scientific name he used. W. Brewster found it a “locally abundant summer resident” at Lake Umbagog in his visits 1871–1909 (Griscom 1938), though it became less common there by 1903 as the number of dead stubs in which it nested declined. J. Dwight collected 1 at Hollis 17 Jul 1876 (AMNH #371038). Goodhue (1877a) called it an abundant summer resident in Webster, his earliest spring arrival being 8 April. Many other early writers considered it common, at least locally if not generally throughout the state (Coues 1868; Dearborn 1898, 1903, 1905; Howe 1901–1903; Allen 1903; Thayer 1912; Forbush 1929). Apparently never very common in the Jefferson area as Wright (1911) said only a few were there 1902–1904 but were displaced by House Sparrows after that. In Concord, White (1924b, 1937) called it an abundant spring and fall migrant and common summer resident, his earliest in spring being 23 Mar 1897, peak spring migration from mid-April to early May, and latest in fall on 10 Sep 1930. At Hanover, Lord’s (1918) earliest spring date was 16 April and average arrival was 28 April in 1912–1917.

Reports published in RNEB 1936–1949 gave the earliest arrival at Ossipee 26 Mar 1945 and the mean first arrival in 12 of those years on 6 April. Latest known in fall was 1 at New Hampton 3 Sep 1943 (V.H. Hebert).

1950 to present. Though still common, a moderate decline in this period.

Spring. Earliest known arrivals are 1 at North Hampton 25 Feb 1976 (H.W. Parker), 1 at Exeter 14 Mar 2007 (S.R. Mirick), 8 at Auburn 16 Mar 2000 (I.C. MacLeod), and 3 at Concord 16 Mar 2002 (R.A. Woodward), several of these reports possibly related to early warm fronts with

southwest winds. Conversely, late cold springs delay arrivals. Usual first arrivals are between 21 March and 6 April with a mean of 28 March. First arrivals have been getting earlier: 12 of 20 first arrivals 1980–2000 were before 26 March, while only 7 of 25 first arrivals 1950–1980 were before 26 March. Twenty-two of these 45 first arrivals were near the coast, 15 were in the Merrimack River valley and Lakes Region, and 7 were elsewhere. General arrival is usually by 15 April, and peak numbers tend to occur from mid-April rarely into mid- or late May. An extended period of cold and drizzly weather 20–25 May 1974 produced a concentration of 5000–10,000 birds at Squam Lake (R.S. Ridgely pers. comm.). Other high counts are 2500 at Exeter 25 Apr 1992 (S.R. Mirick), 2000 at Tilton 18 Apr 1961 (R.W. Smart, V.H. Hebert), 1500 at Exeter 22 May 2005 (P.D. Hunt), 1230 at Lebanon 15 Apr 1967 (W. Riehl), and 1000 at Tilton 11 Apr 1965 (R.W. Smart). They often follow rivers where the first insects are found (E.C. Janeway *in* Foss 1994).

Summer and breeding. Nesting often begins in southern counties even while migration is in progress farther north. Though natural cavities are the traditional nest sites, increasing availability of man-made sites even by the early 1900s and further since 1950 may have increased the breeding population. Tree Swallows occupied a year-old nest of an American Three-toed Woodpecker at Pittsburg 29 Jun 1952 (T. Richards). There were major population declines in 1958–1960 and in 1984–1986, with some recovery noted but without a return to prior numbers. New Hampshire BBS data show a moderate decline in population trend averaging about 2.7% per year in 1966–2009 and 1999–2009 (Appendix IV). Absolute BBS counts showed a slight decline on 22 routes from an average of 373 per year 1966–1975, decreasing to 371 per year 1976–1985, and falling to 324 per year 1986–1995. The *Atlas of Breeding Birds* 1981–1986 documents breeding in 94% of all priority atlas blocks but missing from the higher mountains and Coos County (Foss 1994). Since 1990, the population trend in New Hampshire has been negative (Hunt 2009b). As with the Purple Martin, cold rains during breeding season and competition for nest sites from House Sparrows and European Starlings can contribute to declines. Nests have been found up to 2500 feet elevation (T. Richards). Five southbound migrants were seen flying at 3000 feet elevation over the summit of Mt. Kearsarge in Wilmot 8 Jul 2007 (R.A. Quinn), the known state elevation record. A fairly common breeder in dead tree stubs at the Second College Grant (Cohn-Haft 1995).

Fall. Postbreeding flocking can begin by early July: 15+ at Monroe 7 Jul 1960 (L.E. Cole), especially if the breeding season has been poor. Birds generally leave northern locations by early September, late dates there being 3 Oct 1997 at Jefferson (C.J. Martin) and 26 Oct 1956 at Hanover (H.C. McDade). Though highest fall counts

come from the coast, notable inland counts are 200 at Canterbury 31 Sept 1987 (K.C. Elkins), 800 at Littleton 24 Aug 1988 (R.J. Bradley), and 1200 at Keene 25 Aug 1983 (J.H. Ward). Coastal numbers peak from the last week of August through mid-September, probably including some birds from north of the state. Peak known counts are 1000 at Star Island 30 Aug 2001 (R.W. Suomalainen), 4000 at Seabrook 26 Aug 1995 (S.R. Mirick), 4000 there 26 Aug 2003 (S.R. Mirick), 4000 at Rye 4 Sept 1989 (R.J. Bradley), 5000 at Seabrook 12 Aug 2006 (S.R. and J. Mirick), and 5800 passing Seabrook in 2.5 hours 6 Aug 2008 (T. Bronson). The latest known fall reports are at Little Boar's Head 22 Nov 1954 (C. deWindt *et al.*), at Rye 22 Nov 1968 (N.B. Struckhoff), and at Rye 28 Nov 1968 (E.W. Phinney).

Violet-green Swallow *Tachycineta thalassina*

Status. Vagrant from the west. Hypothetical. Two reports. One seen at New Durham 15 Sept 1965 (R.W. Smart), believed to be a juvenile, which was picked out repeatedly from a large flock of migrant Tree Swallows by an observer very familiar with the species from the west. Interestingly, a Violet-green Swallow was also reported from Nova Scotia 30 Aug 1965 (Erskin). The second record was seen on an ASNH pelagic trip offshore 23 Aug 1985 (E.W. Phinney, J. Galvin *et mult.*). Full acceptance to the state list will require a specimen, unequivocal photograph, or 3 experienced observers. One accepted record for MA in 1997 (BO database 2010).

Northern Rough-winged Swallow *Stelgidopteryx serripennis*

Status. A relatively recent arrival to the state from the south as a migrant and breeder. It extended its range northward in the 1900s, becoming steadily more common over time. Now at scattered locations south of the mountains and local north of there.

Early reports to 1950. Since the New Hampshire state boundary extends to the western water line of the Connecticut River, birds flying over the river though actually nesting in VT were the first state records near Hanover on 12 May 1905 and 29 Apr 1906 (Blake 1907). May (1930a) carefully documented the expansion of this species: a nest in Boscawen 3 Jul 1909 (Martin), a nest in Tilton 14 May 1913 and 4 nests there on 25 May 1914 (Webster 1915), nests in Ashland in late Jun 1916 and again in Jun 1917 (J.B. May), a nest in Manchester in Jul 1923, and the northernmost report of a nest at Snowville 17 Jul 1925. The earliest spring arrival date published in RNEB 1936–1949 was 3 at Andover 3 May 1942 (K.C. Elkins), usual arrival was in the first week of May, and there was at least 1 report for each year in this period. Northernmost reports were birds at Gorham 23 Jun 1939

(S.A. Eliot, Jr.) and Dolly Copp Campground in Martin's Location 15 Jun 1940 (D.L. Kraus). No reports after early July.

1950 to present. Continued spread and increase overall with significant annual variability. Breeding population since about 1990 listed as stable by Hunt (2009b).

Spring. Earliest known arrivals include 8 at Nashua 5 Apr 2000 (R. Andrews), 1 at Newmarket 4 Apr 1999 (S.R. Mirick), 2 at Concord 3 Apr 2010 (R.W. and M. Suomala), and 8 at Littleton 3 Apr 1997 (R.J. Bradley). An unusual northerly report was 2 at Whitefield 28 Apr 2007 (M. and R.W. Suomala). Mean first arrival since 1950 is 15 April but has been getting earlier: mean first arrival 1950–1991 was 21 April, while mean for 1992–2008 is 11 April. These results track recent weather studies which report that warmer temperatures have arrived 2 weeks earlier on average since 1980, especially in the hill and mountain areas of northern New England. Peak spring count is 20 at Exeter 25 Apr 1992 (S.R. Mirick).

Summer and breeding. Within the last half-century it has begun breeding farther north and in increasing numbers. First recorded at Pittsburg in summer of 1953 (H. Halberg *et al.*) and was found breeding in at least 12 locations mainly south of the mountains in 1955 (ASNH reports). In 1958 there was a general decline including an 80% drop at New Hampton (V.H. Hebert) because of bad weather, but numbers rebounded after that. In 1961 it was reported much more frequently in northern areas (ASNH reports). It was not known in the Jefferson area by Wright (1911), but Richards (2000) reports the first probable breeding record for that area at Carroll 6 Jul 1963 and a presumed family was seen at the Whitefield Airport 26 Jun 1981. It was near its northern limit in the Squam Lake region (Ridgely 1988) where it was still a rare and local breeder in 2009 (R.S. Ridgely pers. comm.). New Hampshire BBS data show almost no population trend since 1966, an average of about 0.4% increase per year in both 1966–2009 and 1999–2009 (Appendix IV). The *Atlas of Breeding Birds* 1981–1986 report confirmed breeding in 30% of priority atlas blocks with locations widely distributed but local south of the White Mountains and rare in the western highlands and Connecticut River valley. A very unusual melanistic bird was at Pittsfield 4 Jul 2010 (A.E. Robbins; photo on back cover of NHBR 29 [2]) and another was at Lee 16 May 2011 (S. Young; photo NHBR 30 [1]: 29).

Fall. Southbound migrants have been suspected as early as July 5–6 with reports on those dates from New Hampton in 3 different years (V.H. Hebert). Especially in years with poor breeding success, migrants are regularly found by mid-July. Early high counts are at least 18 in Boscawen on the Merrimack River 11 Jul 2010, probably representing at least 3 families (R.A. Quinn), and 10 at Rochester 28 Jul 2007 (D. Hubbard). Peak counts occur in mid-Au-

gust also probably including young of the year: 20 in Seabrook 19 Aug 2000 (A. and B. Delorey), 20 in Charlestown 25 Aug 1973 (W.W. Kidder), and 36 in Seabrook 14 Aug 1999 (A. and B. Delorey). Latest known reports are at Charlestown 29 Aug 1967 (W.G. Ellison), Star Island 31 Aug 1998 (R.W. Suomala), Exeter 3 Sep 1996 (P.D. Hunt, D.J. Abbott), and Exeter 16 Oct 2005 (S.R. and J. Mirick).

Bank Swallow *Riparia riparia*

Status. Increasingly uncommon and local summer resident and spring and fall migrant. Population has declined since the early 1900s. A species of Special Concern in New Hampshire.

Early reports to 1950. First recorded for the state by Belknap (1792). Considered locally abundant in the state at least since the mid-1800s: Samuels (1867), Goodhue (1877a), Dearborn (1898, 1903) and Allen (1903). W. Brewster found it a regular summer resident at Lake Umbagog 1871–1909, his extreme dates there being 10 May 1887 and 5 Sep 1895 (Griscom 1938). He collected 1 at Rye 22 Aug 1872 (Brewster 1878) and described unusual postbreeding activity of young birds in the Umbagog Region where, on 22 Aug 1896, young birds of both sexes gathered nesting materials and attempted to copulate (Brewster 1898). Nash (1891) found it nesting at North Conway and Marble (1907) found a few pairs nesting at Crawford Notch. Howe (1901–1903) thought it a common but local summer resident at Bridgewater and breeding at Plymouth. Torrey (1903) reported it nesting in a sawdust pile at Franconia Notch in 1902 and 1903. Thayer (1912) found it uncommon at Dublin but nesting in Marlborough. In the Jefferson region it was a locally common summer resident and there was a colony of 100 pairs along the Connecticut River near Lancaster in 1902, latest known in fall being 6 Sept 1909 (Wright 1911). At Hanover, Lord's (1918) earliest spring arrival was 28 April and average arrival was 1 May in 1912–1917. At Concord, White (1924b, 1937) called it a locally common summer resident, his earliest arrival being 22 Apr 1927, his maximum count being 100 on 24 May, and latest was 29 Aug 1927. Several authors speak of its flocking by mid-July and leaving breeding areas by mid-August.

Reported annually to RNEB 1936–1949, the earliest in spring in this period being 1 at Hanover 21 Apr 1941 (F. West *et al.*), peak count being 335 at Hanover 19 May 1940 (R.L. Weaver), and northernmost report at Dixville 11 May 1949 (F. Allen).

1950 to present. Significant decline on balance. Breeding population is listed as declining by Hunt (2009b).

Spring. Earliest known reports are at New Hampton 19 Apr 1963 (R.C. and V.H. Hebert), at Kingston 19 Apr 1975 (D.J. Abbott), and 12 at Weare 25 Apr 2004 (R.W.

and M. Suomala). Mean first arrival date is 26 April. Two-thirds of the first reports came from sites in the Merrimack River valley. Peak spring counts typically occur in the middle 2 weeks of May: 500 at Exeter 22 May 2005 (P.D. Hunt *et al.*), 120 at Salem 24 May 2004 (M.G. Harvey), and 100 at Exeter 11 May 1995 (D.B. Donsker). Cold, rainy weather occasionally delays migration and produces concentrations: about 500+ were at Squam Lake 20–25 May 1974 after an episode of such weather (R.S. Ridgely pers. comm.). Migrants were reported at Jeffreys Ledge as late as 26 May 1982 and 30 May 1968 (ASNH field trips).

Summer and breeding. Breeding numbers are difficult to estimate and vary from year to year due to bad weather and destruction of sites used in earlier years. Nest-hole counts can often exceed the actual number of pairs in a colony, leading to overestimates of birds present. However, nest-hole numbers may indicate order of magnitude of pairs and typically vary from 75–200. High nest-hole counts known are 500 in Franklin in 1962, 270 in Monroe in 1999, 244 in New Hampton in 1960, and 200 in Charlestown in 1960. Early breeding in 1959 was wiped out by bad weather but second attempt broods were successful; second broods in normal years have not been confirmed. Numbers have fluctuated because of weather but have rebounded later. New Hampshire BBS data show a significant decline in the population trend by an average of 8.0% per year in 1966–2009 and 1999–2009 (Appendix IV). The *Atlas of Breeding Birds* 1981–1986 documented breeding in 53% of all priority atlas blocks, but only 42% in the northern 3 counties, and found no confirmed breeding along the coast (Foss 1994). Cohn-Haft (1995) reported a colony of 120 holes at the Second College Grant in Jun 1986. In the Squam Lake area it was a very local summer resident up to 1700 feet elevation (Ridgely 1988) but was unknown to breed there by 2009 (R.S. Ridgely pers. comm.).

Fall. Peak migration period is from the last week of July to mid-September, though the last reports for the year in many areas are sometimes by mid-August. Prior to 1990, peak fall counts were 500 at Charlestown 28 Aug 1971 (W.K. Kidder), 1000 at Charlestown 20 Aug 1970 (W.W. Kidder), 1000 at Littleton 24 Aug 1988 (R.J. Bradley), and 2500 at Charlestown 6 Sept 1976 (W.K. Kidder). Peak counts since 1990 have been much lower: 100 at Plainfield 13 Aug 2006 (P.D. Hunt *et al.*), and 300 at Concord 7 Aug 2001 (J. Williams). Late reports tend to come from the coast; the latest known are from Rye 21 Sep 2010 (S.R. and J. Mirick), Rye 21 Sept 1970 (E.W. Phinney), and Exeter 16 Oct 2005 (S.R. and J. Mirick).

Cliff Swallow *Petrochelidon pyrrhonota*

Status. Now a regular migrant and uncommon locally-scattered breeder which increased greatly in the 1800s as

deforestation progressed and suitable nest sites proliferated. Reduced acreage in agriculture, disappearance of barn nest sites and their associated animals, and arrival of the House Sparrow combined to cause its decline from a peak about 1910 to 1950, though a more recent decline of the House Sparrow (1950 to date) may have reduced the pressure on this species somewhat. A species of Special Concern in New Hampshire.

Early reports to 1950. Bent (1942) felt sure that it occurred in a few remote sites in the northeast on natural cliff sites in the precolonial period. The earliest available state reports are those of Peabody (1840) of birds in the White Mountains in the summer of 1816 and of Nuttall (1832) from Crawford Notch in 1818. Reported nesting in Jaffrey in 1838 (Brewer 1878). As land was cleared and barns were built, it left traditional cliff nests and began to use farm buildings, and the population expanded rapidly. Considered a common to abundant summer resident by Coues (1868), Maynard (1871), Goodhue (1877a), Faxon and Allen (1888), and Dearborn (1898, 1903). Dwight collected 1 at Hollis 11 Jul 1876 (AMNH #371410). At Lake Umbagog, W. Brewster reported that it increased significantly 1870s to 1903; he counted 155 nests at Errol dam 15 Jun 1903 and observed 800 on each day 9–11 Aug 1896 (Griscom 1938).

Allen (1903) considered it a common migrant and summer resident from the lowlands to 1500 feet elevation, and Howe (1901–1903) reported it a common summer resident at Bridgewater. In Crawford Notch, Marble (1907) found it rare, though it nested there in 1906. At Dublin Thayer (1912) called it fairly common, having been abundant earlier. It was a common summer resident in Jefferson (Wright 1911) with migrant flocks up to 200 in late July and a late fall date of 17 Sep 1904. Birds at the Orford colonies arrived on 12 May 1911 and flocks left on 25 Jul (Vietor and Vietor 1912). At Hanover, Lord's (1918) earliest spring arrival was 28 April in 1912–1917, White (1924b, 1937) thought it a scarce summer resident and breeder at Concord though having been more numerous earlier, and Shelley (1934e) reported 1 at the coast as late as 12 Sep 1933. By the 1930s House Sparrows had become widespread in the state, even as far north as Lake Umbagog (Griscom 1938), and began to have a noticeable impact on the breeding success of the swallows by appropriating their nests.

Reports published by RNEB 1936–1949 indicate a much smaller breeding population than in 1870–1910. Earliest spring arrival was 19 Apr 1941 at Hanover (F. West, R. Marble) but only 1 count over 35 was reported. Only 1 large colony was noted, 242 nests at 2 sites in Monroe in Jun 1945 (R.B. Emery). Northernmost record was a migrant flock of 60 at the Second Connecticut Lake 19 Aug 1947 (J. Dennis). Latest fall record was 1 at New Hampton 5 Sep 1945 (V.H. Hebert).

1950 to present. Steady decline as a breeder and transient. Breeding population listed as declining by Hunt (2009b).

Spring. The earliest known arrival dates are from Monroe 8 Apr 1954 (I.F. Hunt), Rye 10 Apr 1970 (L.G. Phinney), and Lebanon 13 Apr 1995 (P.D. Hunt). Mean first arrival date is 28 April; however, the 1950–1970 mean was 22 April while the 1980–2008 mean was later on 2 May, possibly suggesting a smaller number of migrants. Half of first reports came from the Connecticut River valley. General arrival is usually by 9 May; a late report is of birds arriving at Pittsburg 17 May 1958 (F.T. Scott). Seasonally cold and rainy weather can delay and concentrate migrants: 500+ at Squam Lake after such a weather pattern 20–25 May 1974 (R.S. Ridgely pers. comm.). Other peak spring counts of migrants are 500 at Exeter 22 May 2005 (P.D. Hunt *et al.*) and 100 at Concord 6 May 1955 (M.N. Dodge). Cohn-Haft (1995) had but 2 records for presumed migrants at the Second College Grant 29 Jun 1982 and 31 May 1986.

Summer and breeding. Since 1950, breeding distribution appears to have increased slightly in the northern part of the state though in smaller numbers there and elsewhere. Breeding numbers fluctuate and low breeding success often accompanies periods of cold or rain in June. In 1958–1962 there was a series of seasons where first broods failed and late broods survived but numbers decreased by 50%, especially in the north. New Hampshire BBS population trend data show a decline by an average of about 8.6% per year in 1966–2009 and 1999–2009, faster than in either the regional or national areas (Appendix IV). Absolute numbers found on BBS routes declined from an average of 123 per year 1966–1975 to 60 per year 1976–1985, falling to 36 per year 1986–1995. The *Atlas of Breeding Birds* project 1981–1986 reported breeding in 36% of priority atlas blocks; blocks were scattered with gaps in the White Mountains and the southeastern counties. High counts were 360 at New Hampton 30 Jul 1965 (V.H. Hebert), 84 at Pittsburg 23 Jun 1956 (F.T. Scott), 64 at Enfield 14 Jun 1994 (P.D. Hunt), and 40 at Plymouth 23 Jun 2001 (J. Williams). Decline of the state's breeding population may be partly due to fewer suitable traditional breeding sites on farm and other structures and some competition from House Sparrows. Elsewhere, this species began breeding in culverts and under bridges earlier but has recently been observed doing so in New Hampshire (R.A. Quinn).

Fall. Typical fall migration is inland in August while late dates usually occur on the coast. While some migrants are suspected in the last week of July, highest numbers have been found in August, often in western parts of the state. All peak counts have occurred before 1980: 3000+ at Westmoreland 8 Aug 1971 (V.H. and R.C. Hebert), 2200 at Lyme 13 Aug 1970 (V.H. Hebert), 250+ at Charlestown 25 Aug 1973 (W.W. Kidder), and 450 at New

Hampton 21 Aug 1961 (V.H. and R.C. Hebert). A late migrant was at Star Island 23 Sep 2007 (S.R. Mirick *et al.*), and the latest known records are at Hampton 20 Oct 2001 and 23 Oct 1999 (both S.R. Mirick), at Rye 23 Oct 2005 (S.R. and J. Mirick), and at Rye 7 Nov 1993 and 7 Nov 1998 (both S.R. Mirick *et al.*).

Cave Swallow *Petrochelidon fulva*

Status. Very rare visitor from the southwestern United States. Seven reports 2003–2010.

Records. First state record was of 4 at Rye 26–27 Nov 2003 (S.R. Mirick, J. Lawrence *et al.*), full details provided by Mirick (2003). Additional records were at Rye 26 Nov 2004 (D.B. Donsker, D.J. Abbott), at Rye 12 Nov 2005 (R.W. and M. Suomala, S.R. and J. Mirick), at Hampton 4 Nov 2007 (S.R. Mirick *et al.*), and at Hampton 9 Nov 2008 (S.R. and J. Mirick). At least 7 birds were in the Seabrook, Rye, and North Hampton area 24 Nov 2010 (J. O'Shaughnessy, S.R. and J. Mirick) and 5 in North Hampton and Rye 25 Nov 2010 (M. and R.W. Suomala, J. Lambert) (NHBR 29 [3]: 52–53; photos). This species has developed a pattern of moving north into the Great Lakes area in fall and then appearing along the northeast coast in November. The first record for ME appeared at the coast in 2005 and there have been 4 more records since (ME-BRC website, P.D. Vickery pers. comm.); about 30 records for MA 2003–2008 (BO database 2010).

Taxonomic note. All birds found in New England are believed to be of the form *P. f. pallida* rather than the form *P. f. cavicola* from the West Indies.

Barn Swallow *Hirundo rustica*

Status. A fairly common migrant and widespread summer resident. Has decreased since 1900 as agriculture and associated farm structure breeding sites have declined.

Early reports to 1950. Earliest record for the state is that of Belknap (1792). In precolonial times, it is thought to have nested in rock caves, on overhanging ledges, and on mountain cliffs, but soon moved to barns, sheds, bridges and unoccupied buildings as land was cleared (Forbush 1929). One was shot at Rye 21 Aug 1872 (Brewster 1898) and J. Dwight collected 1 at Hollis and 1 at Sanbornton in Jul 1876 (AMNH #371310–371311). By the late 1800s, it became common to abundant and widespread in the state: at Webster (Goodhue 1877a), Belknap and Merrimack Counties and the coastal region (Dearborn 1898, 1903), the Bridgewater area (Howe 1901–1903), Crawford Notch (Marble 1907), the Lake Umbagog region in 1871–1909 (Griscom 1938), Dublin (Thayer 1912), and the Jefferson region (Wright 1911). Allen (1903) called it a common spring migrant, an abundant fall migrant, and common summer resident breeding up to 1500 feet ele-

vation. At Hanover, Lord's (1918) earliest arrival date was 15 April and his average was 29 April in 1912–1917. It seems to have declined slightly by the 1930s as White (1924b, 1937) described it as still common at Concord but not as numerous as previously. It nested on the Isles of Shoals (Abbott 1896) and on Star Island in 1935–1936 (Wright 1937a). Soule (1913) observed flocking behavior followed by the entire flock departing Shelburne 8 Aug 1913. A small flock was seen at Rye on the late date of 5 Nov 1932 (Shelley 1934e). Forbush (1929) said that in fall by “middle August, [birds] in the interior gather to roost in the river marshes...[then in] early morning, rising high, they pursue their flight to the coast, where they join hundreds or thousands more, and all move gradually southward feeding as they go.”

Earliest spring arrival published in RNEB 1936–1949 was 1 at Andover 18 Apr 1942 (K.C. Elkins), many first arrivals occurring in the last week of April. By far the highest count was 10,000 seen at Orford during the month of Aug 1940 (A. McAlister *et al.*), and latest in fall was 7 at New Hampton 19 Sep 1947 (V.H. Hebert).

1950 to present. Though still fairly common, numbers have declined noticeably. Breeding population listed as declining by Hunt (2009b).

Spring. Earliest known arrivals include 1 at Exeter 30 Mar 2000 (R.S. Aaronian), 2 at Tilton 29 Mar 1961 (G. Wallace), 1 at Pittsfield, 28 Mar 1985 (A.E. Robbins), and 4 in Salem 28 Mar 2004 (M.G. Harvey). Mean first arrival date is 16 April, and general arrival is in the last week of April and the first week of May. Cold and rainy late spring weather sometimes delays general arrival and can produce peak concentrations such as 2000–4000 at Squam Lake 20–25 May 1974 (R.S. Ridgely pers. comm.). Typical high counts are 50–200, but other peak counts are 500 at Exeter 22 May 2005 (P.D. Hunt *et al.*), 300+ at the coast 3 May 1967 (E.W. and L.G. Phinney), 400 at Exeter 11 May 1995 (D.B. Donsker), and 1500 at Auburn 21 Apr 1971 (H.W. Parker). Other notable reports include 100 at Star Island 18 May 2008 (E.A. Masterson *et al.*), and the elevation record for the state is at the summit of Mt. Washington at 6288 feet on 4 Jun 2003 (R.A. Quinn *et al.*).

Summer and breeding. Breeding numbers vary considerably from year to year in good to poor breeding seasons. *The Atlas of Breeding Birds* project 1981–1986 found it breeding in 87% of priority atlas blocks and in all but the highest elevation and heavily forested areas (Foss 1994). New Hampshire BBS population trend data show an important decline averaging about 4.5% per year in 1966–2009 and 1999–2009 (Appendix IV). Absolute numbers recorded on BBS routes declined from an average of 446 per year 1966–1975, to 355 per year 1976–1985, to 210 per year 1986–1995. Regularly found nesting at the Second College Grant (Cohn-Haft 1995).

Fall. Postbreeding flocking can begin by the last week of July, especially after poor breeding seasons. Early high counts include 200 at Nashua 30 Jul 1958 (D.B. Ellis) and 500 at Alexandria 5 Aug 1968 (D. Charles). Highest counts typically occur inland from mid-August to early September: “hundreds” at Monroe 17 Aug 1970 (R.B. Emery), “hundreds flying very high” at Littleton 22 Aug 1967 (R.J. Bradley), 500 at Dalton 2 Sept 1972 (E.A. Emery), 600+ at Conway 4 Sept 1966 (H.C. Anderson), and a mixed flock of 1000+ at Stratham 26 Aug 1995 of which a high percentage was Barn Swallows (S.R. Mirick). One was at Star Island 4 Oct 2009 (S.R. Mirick). Latest known reports are from the coast, typically after periods of southwesterly winds: single birds at Hampton 13 Nov 1975 (C. Casas), at North Hampton 28 Nov 1953 (K.C. Elkins), and at Hampton 25 Nov to 1 Dec 2005 (J. O'Shaughnessy, S.R. Mirick *et al.*).

Remarks. There is an albino-plumaged specimen in the Lumen Nelson collection (Keith 1975a), and 1 was seen at Exeter 4 Aug 1968 (E.W. Phinney).

FAMILY PARIDAE

Black-capped Chickadee *Poecile atricapillus*

Status. A permanent resident statewide, breeding in most habitats up to 3000 feet elevation, sometimes wandering higher in postbreeding flocks. Some migration both seasonally and elevationally in spring and fall with occasional large fall movements.

Early reports to 1950. Listed by Belknap (1792) as “Tom Teet, *Parus atricapillus*.” Considered a common permanent resident by all early writers and in all parts of the state. Allen (1903) said it bred from sea level to 3000 feet, ranging up to 4000 feet in postbreeding dispersal. There is some indication that its population density was somewhat greater south of the White Mountains 1850–1920, but it was certainly common in most of Coos County. Several writers noted that it was more common as a migrant in fall than in spring. W. Brewster called it sometimes “abundant” in the Lake Umbagog region 1871–1909 in fall (Griscom 1938), and Wright (1911) said it was found in “much increased numbers” in late August and September. White (1924b, 1937) said it was commoner in winter as did Dearborn (1898, 1903) in southeastern New Hampshire and Whittle (1938b) in the southern Connecticut River valley. In mild winter seasons more than usual numbers may remain north of the White Mountains but it is often scarce there most years.

1950 to present. Little change in distribution or abundance. Population trend listed as increasing by Hunt (2012). There are no known records for the New Hampshire Isles of Shoals.

Spring. Birds that moved south in winter regularly begin returning northward in late February and in March, migration usually continuing into April. Changing numbers of birds at fixed locations such as feeders and birds seen migrating indicate movement: “8 new banded” at Hanover 12 Feb 1958 (H.C. McDade), 13 at Charlestown 1 Mar 1969 but “fewer after that” (W.W. Kidder), flock of 30 left feeders at Hanover 8 Mar 1962 (B.E. Weymouth), “3 days ago 20, now 40” at East Kingston 3 Mar 1977 (D.W. Finch). Examples in April include “25+ banded, a decided migration” at Center Harbor 30 Mar 1971 (J.P. Merrill); “first migrants” at New Hampton 8 Apr 1969 (V.H. Hebert); 6 migrating at New Hampton 12 Apr 1962 (R.W. Smart, V.H. Hebert); “residents returned” at New Hampton 27 Apr 1962 (R.W. Smart, V.H. Hebert); “determined 75+ were migrating that morning” at Rye 1 May 1972 (E.W. Phinney, banding station report).

Summer and breeding. The *Atlas of Breeding Birds* project 1981–1986 found evidence of breeding in all 178 priority blocks (100%). Fluctuations sometimes occur either north or south of the White Mountains and are associated with severe weather, but the overall pattern is consistent. New Hampshire BBS data showed a small increase in the population trend of an average of +1.7% per year in 1966–2009 and 1999–2009 (Appendix IV). Absolute counts on 22 BBS routes showed a steady rise from 200 in 1966 to 500 in 1993. National BBS reports indicated an increase 1966–1979 in the northeast and especially high counts in New Hampshire (E.C. Janeway *in* Foss 1994) though more recent data show the regional annual increase at only 1.8% in 1999–2009 (Appendix IV). Kennard (1970) reported a longevity record at Bedford of at least 13 years.

Fall. There is detectable migratory movement of individuals and irregular occurrence of major fall migrations centered in October. Such major flights occurred in 1959, 1968, 1971, and 1975. In 1959 large numbers appeared at feeders: 40 migrating at New Hampton 11 Oct 1959 (V.H. Hebert), 20 at Littleton 18 Oct 1959 (R.J. Bradley), and 38 migrating at Hampton 9 Nov 1959 (R.C. and V.H. Hebert). Major incursions in ME and MA were recorded in 1968 but no exceptional numbers were noted in New Hampshire, suggesting that such migrations can be localized. In 1971 migration was noted at both coastal and inland sites: 100 birds moving along fencerows at Bridgewater 28 Sep 1971 (*fide* V.H. Hebert), “migrating all month” of Oct at New Hampton (V.H. Hebert), 40 at Bristol 9 Oct 1971 (V.H. Hebert), and “50 moving along Saddleback Mountain” in Deerfield 15 Oct 1971 (E.W. Phinney). Birds banded during such flights proved to be 80–85% juveniles, and it is believed that they moved south in response to reduced food availability (Veit and Petersen 1993). The 1975 flight was the largest docu-

mented. At New Hampton 700 were recorded 11 Sep, 300 on 22 Sep, 308 on 5 Oct, and 163 on 24 Oct (all R.C. Hebert). Other reports included 270+ at Plymouth 22 Sep 1975 (S.A. Fogleman) and 125 at Bristol 5 Oct 1975 (E.W. Phinney). In non-flight years, large numbers are occasionally reported from single locations drawn by locally abundant food sources: 125 on Kancamagus Highway 27 Aug 1967 (W. Riehl) and 98 at Mascoma Lake 8 Oct 1995 (P.D. Hunt).

Winter. CBC data provide the best winter snapshot of this species. Better coverage in more recent years may have produced slightly higher counts. Statewide CBC data 1990–2009 range from 9045 in 1991 to 15,600 in 2005 with a mean of 11,838. Some of the higher individual counts were at Hanover (2721 in 2004, 2520 in 1998) and at Laconia (1876 in 1995). While there are individual reports from across the state throughout the winter period no particular patterns emerge. Occasional large fall migrations usually are not reflected in high winter counts, migrants apparently passing farther south. High winter counts are thought to reflect abundance of food in those areas.

Boreal Chickadee *Poecile hudsonicus*

Status. Fairly common essentially nonmigratory resident in spruce-fir forests above 3000 feet elevation in the White Mountains. Also found regularly at lower elevations in the northern part of the state. Occasionally strays south in winter.

Early reports to 1950. The earliest available report is 1 at Errol in late Oct 1869 (Maynard 1871). Brewster found it to be a permanent resident in the Lake Umbagog region 1871–1909 though scarcer there than Black-capped Chickadee (Griscom 1938). Allen (1903) called it a rather common permanent resident in the White Mountains and northward above 3000 feet elevation and occasionally to 5000 feet where suitable habitat existed. Bolles (1893b) found it on Mt. Chocorua in December. In the Jefferson area, Wright (1911) thought it a common resident above 3000 feet in mountains near Jefferson but also reported several instances of spring and summer occurrences at lower elevations including nestings at about 1200 feet at Meadows 3 Jul 1900 and at 1000 feet in Lancaster 3 Jun 1908 and 7 Jun 1909 (Spaulding 1910). Allen (1903) and Wright (1911) said that some birds move downslope in the mountains and occasionally into foothills in fall and winter: 1 at Whitten Pond on 7 November, at Albany Intervale in late Dec 1900 and on 17 Feb 1901 (G.C. Shattuck), at Whitefield as early as 11 Sep 1906 and near Lancaster 7–11 Oct 1904. The latter year was one in which there were 3 records in eastern MA. This suggests that other occasional reports well south of the mountains were part of general movements south. Goodhue (1877a, 1885) reported 1 collected at Webster

in Nov 1875 and 2 seen there in Nov 1878, and Thayer (1912) had 2 records at the base of Mt. Monadnock. Bagg and Eliot (1937) mention flights recorded at Jefferson as early as 5 Sep 1913 and 1 Oct 1916. Some suitable habitat was probably lost to fires and logging 1700–1880s which reduced its range, but forest regeneration since has allowed it to regain territory again (S. Smith *in* Foss 1994).

Reports were received by RNEB 1936–1949 of birds seen on the following mountains: Mt. Osceola, Mt. Kearsarge in Merrimack County, Mt. Guyot, Mt. Kinsman, Pinkham Notch, Jennings Peak, Mt. Passaconaway, Mt. Jefferson, Sandwich Mountain, Carter's Dome and Mt. Lafayette at 4000 feet, Mt. Moosilauke, Franconia Notch, and Mt. Carrigan. Winter records from lower elevations came from Whitefield, Etna, Ossipee, Waterville Valley, Carroll, Dummer, and Clarksville.

1950 to present. Its preferred habitat expanded at lower elevations north of the White Mountains due to reforestation though this expansion was offset by harvesting of spruce and fir especially 1950–1980. Population trend listed as uncertain by Hunt (2012).

Spring. Birds lingering south of the mountains from winter or moving north from points even farther south have been last seen from mid-March to early May. Examples include single birds at North Hampton 12 Mar 1972 (Mrs. Palmer), Rye 26 Mar 1972 (D.J. Abbott), Rye 21 Mar 1964 (ASNH field trip), at Charlestown 18 Apr 1967 (W.W. and G.L. Kidder), at Rye 14 Mar 1966 (A.C. Borror), at Lee 22 Apr 1966 (O. Earle *et al.*), at feeders in Rye 20 Mar 1970, Hebron 14 Apr 1970 (*fide* V.H. Hebert), Concord 3 May 1970 (H.B. Miller), and Peterborough 4 Apr 1994 (F. VonMertens).

Summer and breeding. Reports have ranged from Mt. Chocorua in the Sandwich Range since 1950 (Taber 1951) to the main White Mountain range and on trails at lower elevations, primarily in Coos County. Numbers reported have risen since 1990, probably a function of more observers. Southernmost reports include on Mt. Chocorua 27 Jun 1954 (D.W. Finch), 6 there on 9 Jul 1959 (B.S. Ridgely), and 2 at 1500 feet in Sandwich Notch 3 Jul 1959 (B.S. Ridgely). Recent reports from climbers include 12 on the Caps Ridge Trail in Thompson and Meserves Purchase 19 Jun 2003 (M.G. Harvey *et al.*). The highest recent counts have come from more accessible lower elevations: 20 at Livermore 26 Jul 2005 (B. Griffith), 20 at Pittsburg 20 Jun 1998 (R.A. Quinn *et al.*), 32 at Pittsburg 13 Jul 2004 (M.G. Harvey *et al.*), and 65 in the Pittsburg region 28–30 Jul 2004 (E.B. Nielsen). Evidence of breeding is rarely reported; 3 examples are 2 feeding young on Mt. Washington 28 Jul 1960 (R.P. Fox), a pair feeding 2 young at Bethlehem in summer 1972 (M.L. Fuller), adults at a nest cavity in Pittsburg 1 Jun 2009 (S.R. Mirick), and 2 adults with 3 juveniles at Dixville 28 Jun 2009 (L. Tanino, R.A. Quinn). The *Atlas of Breeding Birds* proj-

ect 1981–1986 reported breeding from the Sandwich Range northward to the Canadian border in spruce-fir habitat at 3000–4400 feet elevation. North of the mountains it was found at 1000–2000 feet elevation in similar habitat. Breeding was confirmed or thought probable in 21 priority atlas blocks, 12% of all priority atlas blocks (Foss 1994). It has not been found breeding in spruce-fir areas south of the mountains in recent years; the southernmost confirmed locations are Waterville Valley and Sandwich Notch. New Hampshire BBS data show a small average declining trend rate of 2.2% per year in 1966–2009 and 1999–2009 (Appendix IV).

Fall. The highest numbers of the year tend to be reported in August from north of the White Mountains, probably due to recent better access to breeding areas than 20+ years ago and more regular reporters. Examples include 53 at Pittsburg 19–21 Aug 2007 (E.B. Nielsen *et al.*), 45 there 13–16 Aug 2001 (E.B. Nielsen), 82 from 10 to 19 Sep 2003 (M.G. Harvey, E.B. Nielsen), 33 at Bethlehem 8 Aug 2004 (M.G. Harvey), and 10 on Caps Ridge in Thompson and Meserves Purchase 4 Aug 2001 (R.A. Woodward). More typical daily counts are in the 1–8 range.

This species is subject to occasional irruptions south of its usual range. Such movements can occur from mid-September to mid-November but typically occur in October. Examples include 1 at Keene 16 Oct 1954 (C.E. Smith), 2 migrating at New Hampton 11 Oct 1959 and “2 migrants, several singles” at New Hampton 21 Oct 1959 (both V.H. Hebert), 1 at Dublin 1 Nov 1959 (T. Richards), a maximum of 17 “probably all migrating” at New Hampton 19 Sep through 22 Oct 1961 (R.W. Smart, V.H. Hebert), single birds at the coast 9 and 14 Oct 1963 (V.H. Hebert *et al.*), 1 at Rye 26 Sep 1965 (R.W. Smart), and 3 migrating at New Hampton 19–20 Oct 1965 (R.W. Smart). There was a major southward movement from 27 Sep to 26 Nov 1969 which included 1 at Dublin 27 Sep (T. Richards), 26 at Hebron–Bristol 12 Oct (R.W. Smart *et al.*), 1 banded at Rye 30 Oct (E.W. Phinney), and reports from many other towns, several south of the mountains. For comparison, flights were also recorded in MA in 1954, 1959, 1961, and 1969 (Veit and Petersen 1993). There have been no major irruptions south of the White Mountains since 1969; isolated reports have been 1 at 2600 feet elevation on Mt. Monadnock 16 Oct 1984 (B. Hedin), 3 at Peterborough 5 Oct 2005 (B. Clifford), 1 at Penacook 30 Dec 2008 (P.D. Hunt), and 1 at Bow 30 Jan 2009 (R. Craven).

Winter. CBC reports best illustrate its winter status. CBC reports at Pittsburg 1950–1970 include 24 in 1953 and 48 in 1967; the Errol CBC reported 95 in 1957, 29 in 1967, and 28 in 1950. In 1990–2009, statewide counts ranged from 5 in 1994 to 129 in 2006 with a mean of 31. Usually over half of the birds reported have been from

Pittsburg, Errol, and Sandwich Dome and other nearby mountains; occasionally Conway also reports notable totals. Other than in the CBC period, reports come most often from various White Mountain localities and the Lake Umbagog area, including high elevation trails. Other notable reports include 15 at Bethlehem 18 Feb 2002 (G.W. Gavutis, Jr., *et al.*), and southern records of single birds at Orange 22 Dec 2007 (A. Garland), New Durham in Jan and Feb 2006 (A. Turner; photo), Rye 25 Feb 1978 (*fide* R.A. Quinn), and Bow from 3 Jan (CBC) to 24 Feb 2009 (T. Bronson). Sorrie (1975b) showed that every winter flight of Boreal Chickadees to MA occurred during a major southward movement of Black-capped Chickadees, indicating that both species probably react to the same periodic food shortages.

Tufted Titmouse *Baeolophus bicolor*

Status. Invaded the state from the south since 1950 and is now a common permanent resident nearly statewide at elevations below 800 feet, sparingly reported at higher elevations and north of the White Mountains. No reports known for the New Hampshire Isles of Shoals.

Early reports to 1950. The enigmatic report by Belknap (1792) of “Crested Titmouse, *Parus bicolor*,” has puzzled ornithologists for years. At that time it was breeding only as far north as New Jersey, was apparently common on Long Island by 1844 (Bull 1974), was first recorded in Connecticut in 1872 (Sage *et al.* 1913), and was first recorded for ME about 1890 (Palmer 1949). Allen (1903) did not mention it and Forbush (1929) thought it “[d]oubtfully recorded in New Hampshire.” Though there were sight records from 1940 onward which they considered correct, Griscom and Snyder (1955) fully accepted no MA records. Bailey (1955) listed 15 sight records in MA from 1912 to 1954, and it became widespread in the state after a major influx in 1961 (Veit and Petersen 1993). Thus from 1792 through 1956, though it may have occurred accidentally, there are no credible reports for New Hampshire.

1950 to present. Great expansion to virtually statewide distribution year-round and widespread breeding. Listed as increasing in hardwood and mixed forest by Hunt (2009b), it tends to avoid heavy conifer forest.

The first accepted reports were at Wilton 14–15 Oct 1957 (O. Montague, G. Howard), Claremont 1 Dec 1957 (R. Perkins), and Franklin 9–18 Jan 1958 (P. Dougherty *et al.*). Reports increased in the next decade but mainly were late fall and early winter sightings. By 1969 a fall season summary in NHAQ found 29 individuals from the latitude of Sandwich and Moultonborough south to the coast. A winter survey in Jan and Feb 1970 by MA Audubon Society reported 68 birds as far north as Belknap and southern Carroll Counties (D.V. Howard pers.

comm.). Various authors mention the northern expansion of Tufted Titmice (Kricher 1981) and Northern Cardinals in fall 1957, especially along the coast and in the Connecticut River Valley.

Spring. Spring reports became more frequent in the 1970s. Two were found at Portsmouth 28 Apr 1970 (E.W. Phinney), and in 1972 a total of 31 individuals were reported, a third greater than the prior year, all in the southern half of the state; the northernmost reports that year were in Tilton and Franklin. The northernmost by 1975 was 1 at Rumney 6 Nov 1975 (A. Kent). Since 1990 there are few reports for this season since the species has become so widespread and has become a year-round resident in most areas, though birds often appear at sites near the northern boundary of the breeding range in the March to May period where they had not been present in winter. Examples include 1 at Franconia 12 Mar 1993 (J.C. McIlwaine) and 2 at Columbia 7 Apr 2000 and 2 May 2005 (both D. Killam).

Summer and breeding. The first documented reports of breeding were of a pair with 3–4 young at Merrimack in 1973 (C. Weenk), young at Charlestown in 1973 (E. Farrell), and 6 including young of the year at Londonderry 1973 (*fide* H.A. Reynolds). Other early reports were a pair Manchester 20 Jun 1974 (C.L. Hamel) and 4 there 26 Jun 1976 (W.A. Thurber). The first breeding in the Squam Lake region was in Sandwich in 1983 (Ridgely 1988). Statewide New Hampshire BBS reports were 20 individuals or less until 1986 after which numbers rose rapidly to 100+. New Hampshire BBS data show a very sharp annual trend increase of +12.1% per year in 1966–2009 and a +4.6% rate per year in 1999–2009 (Appendix IV). The *Atlas of Breeding Birds* project 1981–1986 recorded breeding in all priority atlas blocks in the southern part of the state, all but 4 at 500 feet elevation or lower. Distribution was concentrated along the coast, in the Merrimack River valley, and eastern areas north to Wakefield (H.P. Nevers *in* Foss 1994). A rare visitor to the Second College Grant on 2 Aug 1983 (Cohn-Haft 1995).

Fall. Typically few are reported in this period since the birds are usually sedentary. An unusual count was 30 at Brookline 14 Oct 1990 (C. and M. Neveu), and the known elevation record is 1800 feet on Gap Mountain in Troy in fall 1975 (*fide* K.C. Elkins). A great incursion occurred in fall 1978 with reports from 31 towns from the southern border north to Littleton and Rumney and including 6–8 birds at East Kingston 6 Nov 1978 (D.W. Finch) and 6 at Portsmouth 27 Nov 1978 (E.G. Locke). Northern reports at this season include 1 at Berlin 2–23 Oct 1977 (M. Eastman), Littleton 12 Oct 1992 (J. Waters), Haverhill 25 Oct 1997 (T. Estill), and Columbia 13 Oct 2004 and 30 Oct 1997 (both D. and B. Killam).

Winter. The first known successful wintering was in the Connecticut River valley 1970–1971 (*fide* H.C. Ander-

son). CBC data illustrate its growing distribution. The first CBC reports were at Hanover, Laconia, and at the coast, all in 1961, after which its numbers and localities slowly increased. Winter census data showed an increase from 68 in 1970 to 442 in 1975 (ASNH *Newsletter*). Statewide CBC totals were 760 in 1989, rose to 1875 in 2004 and fell slightly to 1500 by 2009. The highest individual count totals came from Nashua, Lee, and the coastal region. Northernmost winter reports are at Monroe 1 Jan 2007 (Barnet, VT, CBC) and 2 at Pittsburg 28 Feb 2005 (B. Fish).

FAMILY SITTIDAE

Red-breasted Nuthatch *Sitta canadensis*

Status. A resident nearly statewide at elevations from 500 to 3500 feet. Occasional southward irruptions in fall thought to be due to food scarcity in the north.

Early reports to 1950. It probably bred throughout most of New Hampshire in the precolonial period, and was listed by Belknap (1792) as “Nuthatch, *Sitta canadensis*.” Goodhue (1877a) thought it an uncommon resident at Webster. Dearborn (1898, 1903) thought it only common in winter in Belknap and Merrimack Counties and in the coastal region. However, J. Dwight was able to collect 4 specimens at Hollis in Jun and Jul 1886, a year in which they were especially common in southern New Hampshire (AMNH #373879–373881, #373883; W.H. Fox in Allen 1903). In the Lake Umbagog region 1871–1909, W. Brewster called it a common summer resident but erratic at other times of year, sometimes a common migrant in fall or sometimes absent, a few usual in winter. He noted “swarms” of birds in late Oct 1885 and in 1883, the latter the same year as a major influx in ME (Palmer 1949). Howe (1901–1903) thought it a common summer resident near Bridgewater, and Marble (1907) called it a scarce breeder at Crawford Notch, most numerous as a September migrant. Allen (1903) considered it a common permanent resident of the White Mountains and north country, primarily from 3000 to 4500 feet elevation, his highest report being on the very summit of Mt. Washington at 6288 feet (B. Torrey). Wright (1911) found it uncommon in the Jefferson region up to 2200 feet, but it nested there occasionally (Spaulding 1893, 1896). A nest was found in Holderness 4 May 1902 (Webster 1903a). At Dublin, Thayer (1912) called it uncommon all year but more numerous in winter and occasionally abundant as a fall migrant. At Concord, White (1924b, 1937) thought it uncommon to rare in summer, an irregular winter resident, and an occasionally common to abundant fall migrant, especially in 1923 and again in 1937.

Reports published in RNEB portray a pattern of occasional abundance and then scarcity, breeding regularly at Hanover, Monroe, and Ossipee, and once at Manchester in Jun 1937 (E.J. Goellner). Southbound migrants were typically found in September, rarely earlier as 1 at Meredith 15 Aug 1937 (C. Robbins), presaging a big flight that year. Also hinting at a flight, 7 were found at Monroe 11 Aug 1949 (R.B. Emery) followed by 150 at Eaton 3 Sep 1949 (R.P. Fox *et al.*).

In summary, though the total state population may have declined slightly during the period of deforestation 1750–1880, this species appears to have remained reasonably common statewide, though less so south of the mountains, and probably has increased modestly 1900–1950. Periodic fall irruptions have continued in which birds flood the southern part of the state and often remain for parts of the following year.

1950 to present. The number of birds reported in given years can vary widely, possibly related to seed and insect supply in coniferous forest. While many birds are permanent residents, modest spring migration movements and occasional larger ones in fall are typical. Population trend listed as uncertain by Hunt (2012).

Spring. Early migration activity includes “residents returned” at New Hampton 16 Feb 1959 (C. Robbins), “residents returned” at New Hampton 28 Apr 1962 (R.W. Smart, R.C. and V.H. Hebert), and “last bird left the feeders” at Londonderry 24 Mar 1962 (H.A. Reynolds). A high count is 41 at Albany 15 Mar 1992 (S.R. Mirick), and selected migration reports include 15 at Hanover 24 Apr 1975 (S. Rounds), “2 migrating” at New Hampton 30 Apr 1955 (V.H. Hebert), and migrants at Bow and Peterborough 5–7 May 1955 (G.P. Baker *et al.*). Late migration dates include 5 at Kensington 17 Jun 1997 (G.W. Gavutis, Jr.), 4 at Star Island 4 Jun 1999 (R.W. Suomala *et al.*), 2 there 23 Jun 1993 (A. and B. Delorey), and 2 at White and Seavey Islands 23 Jun 1997 (A. Cook *et al.*).

Summer and breeding. Breeding numbers vary widely from year to year but over time its population is considered stable (Hunt 2009b). Summer counts over 50 are notable: 70 at Livermore 26 Jul 2005 (B. Griffith). The *Atlas of Breeding Birds* project 1981–1986 recorded breeding in 88% of priority atlas blocks essentially statewide with gaps only in the Connecticut and Merrimack River valley lowlands. New Hampshire BBS population trend data showed an annual increase of +2.3% per year in 1966–2009 but a decline of 1.7% per year in 1999–2009; the regional trend also declined in 1999–2009 at a 3.3% rate (Appendix IV). Absolute BBS numbers reported were 10–40 in 1966–1989 and 40–75 in 1990–2008, the latter indicating the highest population density in New England.

Fall. Migration numbers vary widely with high numbers a few years, often leading to higher winter counts, and

many years with little movements. In years of early southbound flights, the first migrants can appear in the south by mid-July or shortly thereafter: 1 at White and Seavey Islands 13 Jul 1997 (A. Cook), 1 there 20 Jul 1999 (D. Hayward *et al.*), 1 there 20 Jul 2004 (M. Barney *et al.*), 1 at East Kingston 1 Aug 1965 (D.W. Finch), 1 at Rye 6 Aug 1995 (S.R. Mirick *et al.*), and 1 at White and Seavey Islands 7 Aug 1999 (D. Hayward, A. LeFrancois). Typically, it remains common in Coos County through August: 27 at Pittsburg 17 Aug 2003 (E.B. Nielsen) and 12 at Shelburne 21 Aug 1993 (D. and J. Romano). Migrant numbers usually peak in September: 85 at Center Harbor 21 Sep 1997 (A.J. Vazzano *et al.*), 50 at Star Island 23 Sep 2007 (ASNH field trip), 12+ there mid-Sep 1976 (R.C. Hebert), 23 at Enfield 26 Sep 1998 (P.D. Hunt), and 33 at Bristol 4 Oct 1976 (E.W. Phinney). Unusual numbers of later migrants are 30 at Jefferson 25 Oct 2004 (A.J. Vazzano *et al.*) and 23 at Albany 18 Nov 2008 (S.R. Mirick). Banding data from the Isles of Shoals show a regular semi-annual fall migration (R.W. Suomala pers. comm.).

Winter. Times of abundance vary both by year and by location. CBC data 1995–2009 range from 373 in 2007 to 1347 in 1997 with a mean of 536, the total in 1997 being more than 2 times the recent mean. In that year the coastal region, Laconia, and Hanover all reported totals many times their usual numbers while Errol's and Pittsburg's totals were normal; this suggested a drop in food supply in the north, possibly even in southern Canada. In 1999 statewide totals were near normal at 537, but Errol and Pittsburg reported nearly 5 times their usual numbers. In 1993, statewide numbers were normal but the Connecticut River valley towns of Hanover, Peterborough, and Keene reported much higher than usual numbers. The reasons for these regional variations are not fully understood.

White-breasted Nuthatch *Sitta carolinensis*

Status. A common and widespread permanent resident statewide except above 2000 feet elevation and in Coos County where it is less common.

Early reports to 1950. The “Nuthatch, *Sitta curspaeae*,” listed by Belknap (1812) probably belongs here. Maynard (1871) found it common at Errol in 1870, but nearby at Lake Umbagog, W. Brewster 1871–1909 thought it a rare summer and winter resident though a regular fall transient (Griscom 1938). Goodhue (1877a) thought it a common summer resident and breeder at Webster, and Dearborn (1898, 1903) found it in modest numbers in Belknap and Merrimack Counties and in the coastal region, most numerous in winter. Howe (1901–1903) called it uncommon near Bridgewater, and Marble (1907) found it only in September at Crawford Notch when it was a common transient. It was considered a common permanent resident at lower elevations, espe-

cially in the south, but less common higher in the sub-Canadian zone up to 2000 feet elevation (Allen 1903). Thayer (1912) thought it uncommon all year at Dublin. In the Jefferson region it was considered a rather uncommon permanent resident, a few individuals recorded in summer in the valleys and on slopes up to 2000 feet (Wright 1911). At Concord, White (1924b, 1937) considered it rare in summer, regular in small numbers the rest of the year, with migrants in September and October. Virtually unreported to RNEB 1936–1949.

1950 to present. Continues common and perhaps partially migratory in the northern part of the state. Appears to have increased since 1950 as the growth of hardwoods has replaced harvested spruce and fir north of the White Mountains. Rarely subject to incursions in fall and winter.

Spring. Evidence of migration in March and April includes a migrating flock of “14 in same tree” 7 Mar 1966 at Bedford (W. Riehl), 6 at Bow 28 Apr 1955 (G.P. Baker *et al.*), 6 at Peterborough 1 May 1955 (W.P. Hill), 4–6 at Concord “after absent all winter” 1 May 1955 (M.N. Dodge).

Summer and breeding. Early nesting was reported occasionally; examples include “7 young coming out of nest” at Bow 10–13 Mar 1968 (M.N. Dodge *et al.*), “2 nesting” at Wentworth 27 Mar 1976 (H.M. Van Deusen), and a “pair nesting” at Northfield 31 May 1977 (K. Purring-ton). The *Atlas of Breeding Birds* project 1981–1986 reported some evidence of nesting in 157 priority atlas blocks (88%), including in all 9 southern counties and about 50% in Coos County (Foss 1994). It regularly nests up to an elevation of 2500 feet in mixed woodland, edge areas, and suburbs. The increase of hardwoods during the reforestation period in the 1900s, the increase of bird feeders, and a slightly warmer climate have possibly contributed to a population increase. New Hampshire BBS data show an average increasing population trend of about +2.3% per year in 1966–2009 and 1999–2009 (Appendix IV). Absolute numbers recorded on BBS routes increased from 20–40 in 1966–1980 to 60–80 in 1981–1994. Uncommon at the Second College Grant (Cohn-Haft 1995). Breeding population listed as increasing since 1990 in hardwood and mixed forest by Hunt (2009b).

Fall. Migratory movement tends to be modest, if any, and most such reports are in September: “birds migrating” New Hampton 15, 20, and 24 Sep 1961 (R.W. Smart, V.H. Hebert), “seen migrating” at New Hampton 17 Sep 1963 (V.H. Hebert), 7 at Jackson 13 Sep 1966 (*fide* R.W. Smart), “2 migrating” at New Hampton 30 Sep 1975 (V.H. Hebert), “many in groups of 2–12” at Plymouth 2 Oct 1979 (S.A. Fogleman), and 1 at Star Island 30 Oct 1970 (D.W. Finch). In many years no migration has been noted; counts of 1–5 birds are typically reported, slightly more often south of the mountains.

Winter. Found statewide with the largest numbers in the south, numbers increasing somewhat recently. Increased numbers of CBC party hours, slightly milder winter weather and probably increased numbers of winter bird feeders 1990–2009 have probably combined to produce higher counts. Counts ranged from 674 in 1991 to 2133 in 2004 with a mean of 1268; the 1999–2003 mean was 1168 and the 2004–2009 mean was 1541, illustrating the increase. Nashua and Lee typically have the highest individual count totals, usually followed by the coastal region, Sandwich, Laconia, and Hanover. In the far north, Pittsburg and Errol usually report 0–10.

FAMILY CERTHIIDAE

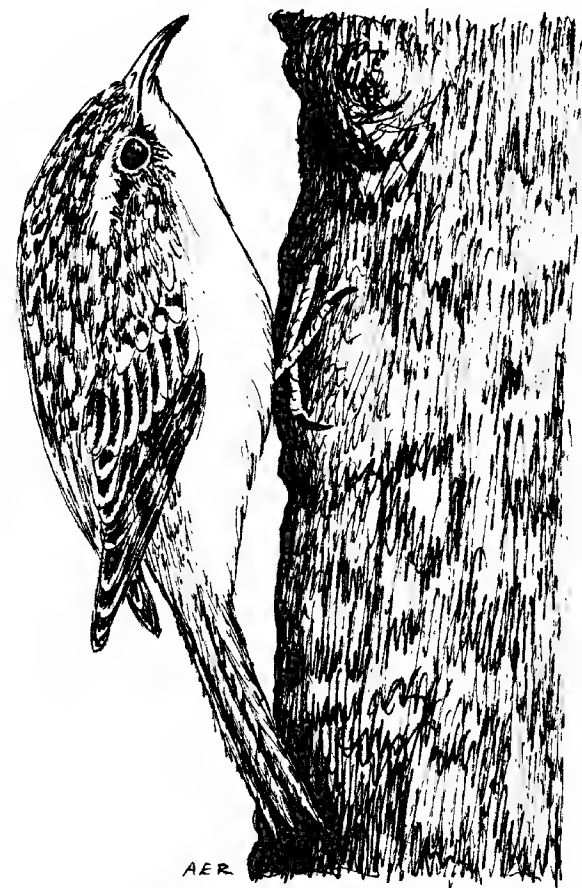
Brown Creeper *Certhia americana*

Status. Uncommon permanent resident, widely distributed in coniferous and mixed forests statewide but most densely south of the White Mountains. Some seasonal migration; reported statewide in winter.

Early reports to 1950. First listed for the state by Belknap (1792) as “Creeper, *Certia pinus?*” It probably nested throughout the state before the mature forests were cleared, but by 1900 it was found as a summer resident and breeder only in the mountains and northern coniferous forests from 525 to 4100 feet elevation; it was considered a regular migrant and wintering species in the southern part of the state (Dearborn 1898, 1903; Allen 1903; White 1924b, 1937). In 1871–1909, W. Brewster found it a common breeder in the Lake Umbagog region, but it suddenly became scarce there after 1884 and 1885 (Brewster 1879b, Griscom 1938), after which he only found it breeding once. Goodhue (1877a) considered it common in winter but rare in summer at Webster; at Holderness it was not found below 500 feet (Comey 1904), and Marble (1907) thought it uncommon at Crawford Notch except for migrants in September. Thayer (1912) considered it rare in summer and winter but a common spring and fall migrant at Dublin, breeding rarely on Mt. Monadnock above 1500 feet. In the Jefferson region, Wright (1911) found it uncommon in summer, occasional in winter, a migrant once as early as 15 August. By 1930–1936, it had become common in the Lake Umbagog region again (G.L. Perry *in* Griscom 1938).

Reports submitted to RNEB 1936–1949 indicate the typical migration period was the last week of March through the second week of April in spring and the middle 2 weeks of September, straggling into October in fall.

1950 to present. Continues uncommon and widespread. As reforestation has progressed, its known breeding area has extended farther south in suitable habitat. Numbers



reported have certainly increased as the number of observers has grown. Population trend listed as stable by Hunt (2012).

Spring. Singing sometimes begins by late February, always by March, and migration peaks in April. Illustrative spring reports include 4 at Newington 11 Mar 1968 (L.G. Phinney); “2 singing” at Dunbarton 21 Mar 1972 (J.B. Grant); 8+ at Londonderry 10 Apr 1958 (H.A. Reynolds); 7 at Rye 12 Apr 1975 (E.W. Phinney); 7 at East Kingston 19 Apr 1977 (D.W. Finch); “6, may indicate a migrating flock” at Exeter 27 Apr 1966 (L.G. and E.W. Phinney); 16 at Hanover May 6 1975 (S. Robinson); and “definite migrants” at the coast 2–9 May 1965 (R.C. and V.H. Hebert).

Summer and breeding. It occasionally breeds early: “2 carrying nesting material” at Charlestown 19 Apr 1968 and “2 with nesting material” at Lee 27 Apr 1968 (both *fide* E.W. Phinney). Breeding has also been noted in late June and July: “young in nest” in the Pemigewasset Wilderness 22 Jun 1959 (H.C. McDade *et al.*) and family groups totaling 8+ on Mt. Chocorua 9 Jul 1959 (B.S. Ridgely). By 1954 its breeding territory had expanded as far south as Moultonborough and thus it had returned to the southern part of the state from which it was largely extirpated during the deforestation era 1750–1900. Numbers reported each year have varied widely; a decline was noted in the Lake Umbagog area in 1963, and BBS data 1966–1994 show fluctuations from 20 in 1972 to only 1 in 1973, though averaging 8–10. These numbers may be low since birds are most often detected by spring song which occurs in March, well before BBS studies. New Hampshire BBS population trend data show virtually no increase (+0.7%) in 1966–2009 but a 1.7% per year decline in 1999–2009 (Appendix IV). The *Atlas of Breeding*

Birds project 1981–1986 showed it widely distributed throughout the state in 79% of the priority atlas blocks, though commonest in the southeast (Foss 1994).

Fall. Though weather conditions can affect the number and timing of migration, the first southbound migrants are regularly found by September and October: 14 at Windham 5 Sep 2002 (M.G. Harvey), “first arrivals” at Concord 11 Sept 1961 (M.N. Dodge), 1 at Star Island 13 Sept 1964 (ASNH field trip), 3 there 29 Sep 2002 (M. Suomala *et al.*), 12 there 30 Sep and 5 Oct 2007 (E.A. Masterson *et al.*), 4 at Seabrook 8 Oct 1961 (R.W. Smart, V.H. Hebert), and 4 at Easton 12 Oct 1998 (S.B. and M. Turner). A late report of probable migrants is 8 at Durham 20 Nov 2005 (T. Bronson). Regularly banded at the Isles of Shoals in September (R.W. Suomala pers. comm.).

Winter. In 1950–1980 most winter reports came from south of the mountains, but more recently counts in northern areas have increased. An unusual high northern count was 9 at Errol 21 Dec 1971 (D.W. Finch). As in other seasons, numbers in winter vary considerably. Statewide CBC data 1995–2009 ranged from 65 in 1995 to 200 in 1999 with a mean of 137, a significant change from 42 in 1971. Since 2000, the northern localities of Pittsburg, Errol, and Littleton usually report 5 or more; Hanover, Sandwich, and Laconia often record 20–40 individuals, and Keene and the coast average under 10. The 1997 CBC total was unusually high at 180, also a peak year for Red-breasted Nuthatch. An observed increase in reports in late February may be due to onset of singing in anticipation of breeding.

FAMILY TROGLODYTIDAE

Carolina Wren *Thryothorus ludovicianus*

Status. An uncommon resident in the southern half of the state, having arrived in the last half-century from the south. Numbers are increasing as is its range in the state (Hunt 2009b, 2012). There are fluctuations in numbers and losses in severe winters but in many areas it is essentially a permanent resident.

Early reports to 1950. The first record was of 2 birds found 7 Aug 1880 at Rye Beach, 1 of which was collected (Spelman 1881a). The second record was a male collected 25 Apr 1902 in Webster by C. F. Goodhue (Townsend 1909, Goodhue 1922). Other early sight records are 1 at Alstead (R. Hoffmann) on 6 Jul 1903 (Allen 1909), 1 at Goffstown 9 Sep 1935 (Goellner 1936), 1 at Hancock 3 Aug 1940 (W. Perkins), and at Center Ossipee 21 Aug 1940 (Preble 1941). One appeared at Concord in late Nov 1946 and remained through Dec that year (H.W. Parker).

All but the first report occurred in the Merrimack and Connecticut River valleys, the latter an area colonized early in MA.

1950 to present. In this period it dramatically expanded its range, increased in numbers and locations, and survived the winter season for the first time. The coastal region and the 2 major river valleys were colonized first. Examples include Exeter 19–23 Feb 1950 (N.L. Hatch), East Andover 20 Nov 1953 (K.C. Elkins), Concord 1 Nov 1953 (M.N. Dodge), and Meredith 23 Mar 1956 (A. Lincoln). Later arrivals were at Andover, New Hampton, and Londonderry. In 1959–1966 birds were reported near the coast at North Hampton, Hampton, Durham, and farther west along the border at Salem Depot, Hollis, and Greenfield. In the Connecticut River valley, an early record was Hanover 14 May 1967 (ASNH field trip), northernmost now being at Littleton 1 Aug 2009 (M. Boulanger). By 1980 birds had been reported from 33 different towns including Keene and Hennicker in the southwest; north to Plymouth, Bristol, Sandwich, and Laconia; and at Kensington, Rye, and Seabrook on the coast. Fifty-five more towns south of the mountains reported it 1981–2003. Of the 88 total towns, 33 reported it only in 1 year while 55 reported it more than once.

Spring. At this season it seems to be first reported in March from locations where it was not known to winter: examples include Lyme 2 Mar 1990 (M. Kilham) and Kensington 5 Mar 1998 (G.W. Gavutis, Jr.). Some wintering birds often are first noticed in March and early April when they begin singing; such reports tend to peak in April and May. A wanderer, possibly from Appledore Island, ME, where it occasionally nests, was at White and Seavey Islands 20 May 2005 (M. Barney *et al.*).

Summer and breeding. Breeding was first noted at Hudson (B. MacCarthy) and Durham (C. Casas, J. Beckett) in summer of 1991 and in Concord 19 Jun 1992 (D. Little). New Hampshire BBS data show a very rapid population increase of +14.8% per year in 1966–2009 and +12.8% in 1999–2009, the latter equalling the regional increase (Appendix IV). A probable postbreeding disperser was at Star Island as early as 20 Jul 1992 (L. Fischer). By late August, birds have been found in areas where they had not nested. Breeding population listed as increasing by Hunt (2009b).

Fall. Many wintering birds are not reported after November when they stop singing unless they frequent feeders. Though not usually considered particularly migratory, there are numerous records from Star Island: 2 on 20 Aug 1999 (R.W. Suomala *et al.*), 11 Sep 1993 (A. and B. Delorey), 20 Sep 1997 (A. and B. Delorey), and 29 Sep 2002 (M. Suomala *et al.*); however, any or all of these reports could be of birds from Appledore where it occasionally has nested since the late 1980s (Borrer and Holmes 1990). A bird in Moultonborough 29 Sep to 27 Oct 1968

that died in a rat trap is possibly the undated specimen (#412-C) at UNH.

Winter. It has been increasing in both numbers and area colonized. In the 1950s there were scattered reports: Wolfeboro 10–22 Jan 1959 (R.G. Carpenter III) and at Meredith in winter of 1957–1958 (Kipp). In the 1960s it was still rare but found farther north: 2 at Sandwich 15 Nov 1969 to 20 Jan 1970 (I. Bridges *et al.*). In the 1970s “probably stayed the winter” at Bristol 16 Dec 1973 to Jan 1974 (D.W. Finch, D.J. Abbott *et al.*). By the 1990s reports ranged occasionally to late February, and by 2000–2007 even more birds were reported, especially in the winter of 2004–2005 when there was a veritable explosion of reports. Northern reports were at Lancaster 23 Jan 2003 (D. Haas), just north of Gorham 11 Jan 2011 (R.S. Ridgely), and Monroe 14 Feb 2007 (E.A. Emery). The earliest CBC reports are from Laconia (1975) and the coast (1981). In the 1990s there were 2–10 birds statewide on CBC reports ranging to Laconia, Concord, and Hanover. From 2000–2009, CBC totals ranged from 9 to 52 with a mean of 25. In 2004–2007 totals were 25–52 with a mean of 37. Though some do not survive harsh winters, increasing numbers of bird feeders have probably increased survival rates.

Bewick's Wren *Thryomanes bewickii*

Status. Vagrant from the south and southwest recorded 5 times in early April to mid-October.

Early reports to 1950. A bird collected 2 Apr 1890 in Alton by N. Dearborn is now at the MCZ (#193472; Allen 1903, Forbush, 1929).

1950 to present. One at Monroe 24 Apr to 3 May 1954 (I.F. Hunt). A female at Epsom 13 Jun to 11 Sep 1966 (R. Ring *et mult.*) built a nest in a barn but had no mate; an egg removed 14 Jul was infertile, and 4 other eggs were found 15 Jul, 3 of which were broken. A photograph by R. Ring of the bird leaving the nest 2 Jul 1966 appears in NHAQ 19 (4): 132–35, October 1966. Other reports at Greenland 22 Oct 1967 (L.G. Phinney, E.W. Phinney) and 1 at Portsmouth 30 Aug 1985 (E.W. Phinney) are best treated as hypothetical for lack of 3 observers.

MA has 3 convincing sight records in September and October 1975–1986 and 3 earlier records lacking sufficient details (Veit and Petersen 1993). New Hampshire records are mainly in spring and summer while reports from MA and ME are in September and October. This species formerly nested as far east as central Pennsylvania (McWilliams and Brauning 2000) and southeastern New York (Bull 1974) but is now extirpated from both areas. One accepted record for VT in 1975 (C.C. Rimmer pers. comm.) and considered hypothetical for ME (ME-BRC website).

House Wren *Troglodytes aedon*

Status. A fairly common spring and fall migrant and summer resident, mainly south of the mountains; uncommon to absent in mature forests and above 1700 feet. Three early winter reports.

Early reports to 1950. First listed for the state by Belknap (1792) who included the “Common Wren, *Motacilla trochilus*,” in his list. Early reports indicate that the House Wren was common around orchards and buildings even in northern parts of the state (Maynard 1871) and in Conway and Bethlehem (Minot 1876). Goodhue (1877a) thought it a rare summer resident at Webster. Arrivals of the House Sparrow followed by the European Starling are thought to be the reason for a major decline in House Wrens in the state 1875–1883 (Forbush 1929). W. Brewster found it in New Hampshire at Lake Umbagog only twice, in May 1896 and Jun 1897, but local people told him it had formerly been much more common in the area than it was then (Griscom 1938). Dearborn (1898) considered it rare and local in Belknap and Merrimack Counties but said it had been more common there formerly. By the turn of the century it was a “very rare summer resident” (Batchelder and Fogg 1899). Howe (1901–1903) thought it uncommon near Bridgewater but present in Plymouth in 1900 and 1901. Allen (1903) called it an “uncommon summer resident in the southern and central parts of the state, but rare north of Lake Winnepesaukee.” In Durham it was considered less common in 1900 than it had been 50 years earlier (Dearborn 1903). In Tilton it was rare and local in 1904 but a pair nested there in 1911 (Perkins 1912). Thayer (1912) called it rare and irregular at Dublin.

There is evidence that it began to increase again after about 1910. Wright (1911) called it a “fairly common summer resident” in the Jefferson area, noting 10–16 nests in several years, birds present as high as 1400 feet elevation on Mt. Starr King, and a late fall report of 5 Oct 1908. Lord's (1918) early spring arrival date at Hanover was 29 April, his average date was May 6 in 1912–1917; and Goodhue (1922) reported it as a local but regular summer resident at Webster. At Concord, White (1924b, 1937) thought it still a rare to uncommon summer resident but found his first nest there in 1921 and there were 6 pairs by 1935. Goodhue (1922) considered it a local but regular summer resident at Webster, it having increased since 1877. It had “reached Manchester by 1936” (Goellner 1937), and G.L. Perry found it back in the Lake Umbagog region again by 1930–1936 (Griscom 1938).

Reported annually to RNEB 1936–1949, earliest in spring being 1 at Manchester 21 Apr 1938 (E.J. Goellner), general arrival by the middle 2 weeks of May. Well established as a breeder in the southern part of the state, especially at Manchester (E.J. Goellner). Fall departure was typically by the last 2 weeks of September, occasionally

earlier, and latest known record was 1 at Manchester 8 Oct 1937 (E.J. Goellner).

1950 to present. A moderate decline has occurred in this period. Population trend listed as stable by Hunt (2012).

Spring. Most first reports have been in the first week in May. Mean first arrival has been 28 April. Earliest known reports are 1 at Concord 19 Apr 1976 (D. Barter *fide* H.B. Miller), 1 at Concord 20 Apr 2002 (R.W. and M. Suomala), and 1 at Exeter 20 Apr 2008 (R.S. Aaronian). Average arrival in Hillsborough and Cheshire Counties 1974–1984 was 30 April (H.M. Cadot). Coastal migrants were at White and Seavey Islands 25 Apr 2001 (D. Hayward *et al.*) and 4 May 2003 (J. Derrick *et al.*). Single-day counts are typically 1–4 with peak counts of 14 at Lee 11 May 1966 (O. Earle *et al.*), 10+ at the coast 17 May 1959 (W. Taber *et al.*). A late northern report was a bird first arriving at Pittsburg 31 May 1969 (F.T. Scott).

Summer and breeding. A fairly common summer resident in the southern half of the state and up to 1700 feet elevation (Ridgely 1988). New Hampshire BBS population trend data show an average decline averaging about 1.5% per year in 1966–2009 and 1999–2009 (Appendix IV). Absolute numbers recorded on BBS routes rose to 133 in 1972 and 145 in 1975 followed by a sharp decrease, possibly due to a severe winter on the wintering grounds 1977–1978. Counts returned to the 100 level thereafter (NHBR 14 [2]: 34). The *Atlas of Breeding Birds* project 1981–1986 reported nesting evidence in 68% of priority atlas blocks, mainly from south of the mountains, with few reports from heavily forested, higher elevation, or northern areas. One exception was a bird singing at about 2975 feet elevation in the Ossipee mountain range 18 Jul 1983 (T. Richards), the elevation record for the state. A shrub, edge, and developed habitat specialist, its breeding population is listed as declining since about 1990 by Hunt (2009b).

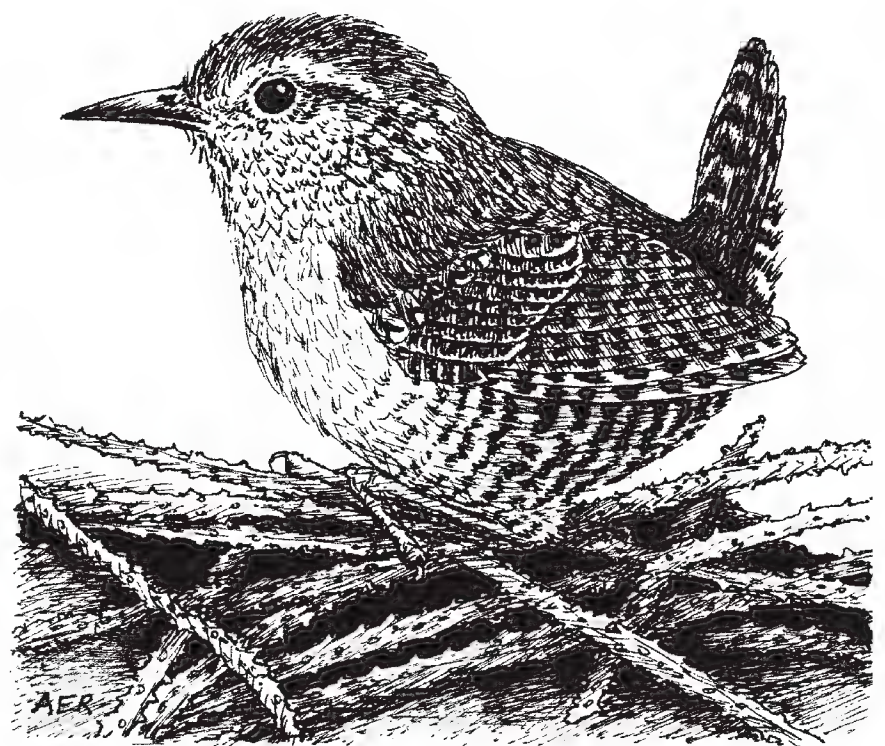
Fall. A very early migrant or postbreeding dispersal bird was at White and Seavey Islands 5 Aug 2001 (A. LeFrancois). More typical first migrants are suspected by the third week of August, and peak fall migration is from mid-September into early October. Fall coastal records are 2 banded at Star Island 29 Sep 2000 (R.W. Suomala), 2 there 1 Oct 1967 (R.W. Smart *et al.*), 1 at Star Island 5 Oct 2005 (E.A. Masterson), and 1 there 7 Oct 1973 (ASNH field trip). Usual fall counts range 1–4 birds, 2 higher ones being 8 at Concord 24 Sep 2008 (M. Suomala) and 6 at Northfield 23 Sep 2003 (P.D. Hunt). Most breeding birds have left the state by late September. Latest known records are 1 at Star Island 16 Nov 1969 (R.W. Smart *et al.*), 1 banded at Rye 3 Nov 1971 (E.W. Phinney), 1 at Hampton Beach 1 Nov 1953 (D.W. Finch), and 1 at Nashua 27 Nov 2010 (D.S. Deifik).

Winter. One on the Coastal CBC on 21 Dec 1969 (*fide* A.C. Borrer), 1 there 19 Dec 1987 (*fide* A.C. Borrer), and 1 on the Lee/Durham CBC 27 Dec 1987 (*fide* S.R. Mirick).

Winter Wren *Troglodytes hiemalis*

Status. A common seasonal migrant statewide, and a common breeder at higher elevations and north of the White Mountains. Becoming a more frequent breeder in the southwestern part of the state. Increasingly has begun to linger into December and even into February, possibly overwintering.

Early reports to 1950. The earliest record for the state appears to be 1 at Hollis 19 Feb 1875 (W.H. Fox) as reported by Allen (1903). Other early reports include it nesting in the White Mountains (Minot 1876), nesting there on 23 July (Stearns 1887), and found in Milan in Jul 1877 (Nutter 1892). Goodhue (1877a) called it a common migrant at Webster and found it on Mt. Kearsarge in Merrimack County 22 Jun 1875. Most early writers considered it a common spring and fall migrant in most of the state, found rarely in winter south of the mountains and in the coastal region (Dearborn 1898, 1903; Cram 1899; Allen 1903; Goodhue 1922; White 1924b, 1937). In the north and in the White Mountains, it was a common breeder in mature conifer forest, usually near streams, its numbers declining in many areas as lumbering removed large trees (W. Brewster at Lake Umbagog 1871–1909 *in* Griscom 1938; Howe 1901–1903; Marble 1907; Wright 1911). Thayer (1912) found it breeding regularly on Mt. Monadnock but rare or absent from the Dublin area in winter.



Reports published in RNEB 1936–1949 include a single midwinter report at Hanover 13 Feb 1944 (W.E. Lanyon), earliest spring arrival dates of 31 Mar in New Hampton in 1945 (V.H. Hebert) and at Stark in 1948 (T. Richards), and usual spring arrival by the middle 2 weeks of April. In fall, last migrant reports were usually by mid- to late October, extreme late records being 1 as far north as Dixville 8 Nov 1948 (F. Allen) and 1 at Hanover 27 Nov 1937 (E. Haskins).

1950 to present. Continues as a common breeder statewide except in the southeast. Common spring and fall transient, rare in winter. Population trend listed as uncertain by Hunt (2012).

Spring. Earliest known arrivals are 1 at Peterborough 1 Mar 1997 (R. Frechette), at Kensington 2 Mar 2001 (G.W. Gavutis, Jr.), and at Monroe 4 Mar 1967 (P. Powers), unless they were overwintering birds. Mean first arrival is 16 March. Typical daily numbers are 1–3; higher counts are known from breeding locations where there may be both migrants and potential breeders. Migrants were noted on Mt. Washington, examples include 15 Apr 1951 (Wade 1952) and 17 Apr 1955 (H.C. McDade *et al.*). Island reports are evidence of migration: 2 on Star Island 25 Apr 1965 (ASNH field trip), 9 there 2 May 1971 (R.W. Smart), 1 there 8 May 1977 (H.W. Parker *et al.*), and 1 there 8 May 1966 (ASNH field trip). Late migrants include “last migrants” at Lee 11 May 1965 (O. Earle *et al.*) and 1 at Rye 19 May 1968 (R.W. Smart *et al.*).

Summer and breeding. Usually found at higher elevations up to 5000 feet elevation, often near streams. The breeding population is thought to have increased overall since 1950, but there have been periodic declines, probably due to severe winters on its wintering grounds in the southern United States (Forbush 1929, Ridgely 1988, Foss 1994). Population density is greatest north of the White Mountains; high counts include 50 at Pittsburg 7 Jun 1993 (A. and B. Delorey), and 60 there 12–14 Jul 1952 (D. Snyder *et al.*). Notable reports from the southern part of the state include 1 at Hillsborough 11 Jul 1996 (P. and D. Kienholz), “a singing male” at Rye in Jul 1961 (R.W. Smart, V.H. Hebert), and several at 1600–2300 feet elevation on Mt. Monadnock in summer 1972 (J.H. Ward). New Hampshire BBS data show no change in the population trend for 1966–2009 but a significant 7.0% decline per year in 1999–2009 which mirrors the 6.1% per year decline in the region in 1999–2009 (Appendix IV). As reforestation continued after 1950, suitable habitat returned to many areas in the southern part of the state and it began breeding there again, probably returning to areas from which it was extirpated in the deforestation era 1750–1900. However, numbers began to drop after 1990. The *Atlas of Breeding Birds* project 1981–1986 documented breeding activity in 70% of priority atlas blocks with moderate distribution in the southwestern high-

lands but found only 4 sites in Rockingham, Strafford, and eastern Hillsborough Counties (Foss 1994).

Fall. Early migration or postbreeding dispersal has been noted in August: 2 at Charlestown 16 Aug 1963 (W.W. Kidder) and at Plainfield 30 Aug 1964 (C.S. Boyd). Peak migration is the last week of September and the first 2 weeks of October. Reports include “first movement noted” at Andover 19 Sep 1970 (K.C. Elkins), 1 at Star Island 25 Sep 1966 (ASNH field trip), 1 there 1 Oct 1967 (ASNH field trip), 8+ there 5 Oct 1969 (R.W. Smart *et al.*), and 1 there 12 Oct 1975 (E.W. Phinney *et al.*).

Winter. December reports occur regularly. CBC data 1996–2009 show 4–13 birds statewide with a mean of 9. CBC reports are widely scattered and include Lee, Nashua, the coastal region and at least 7 other towns from Errol to Peterborough. Highest statewide CBC totals were 17 in 2006, 13 in 1998, and 12 in both 2004 and 2001. There have been several recent reports of single birds into February, possibly due to milder winters: New Castle 20 Feb 2005 (S.R. and J. Mirick), Kensington 18 Feb 2006 (G.W. Gavutis, Jr.), and Boscawen 18 Feb 1991 (C. Foss *et al.*).

Sedge Wren *Cistothorus platensis*

Status. A rare and local summer resident of wet grassy-sedge meadows. It has declined sharply since the 1940s, probably due to loss of habitat, and is now considered Endangered in New Hampshire.

Early reports to 1950. The first known state report was from 5 miles west of Rye Beach in 1872 by W. Brewster, and a specimen was collected at Rye Beach 24 Aug 1881 (Spellman 1882). Allen (1903) collected 1 as far north as Intervale 15 Sep 1898. It nested in the Manchester meadows in 1899 (Batchelder and Fogg 1899), and Thayer (1912) thought it a very rare breeder near Dublin but found a nest there in 1902 at slightly more than 1000 feet elevation. Wright (1911) knew only of a single observation near Lancaster on 7 Jun 1907 (F.B. Spaulding, F.B. McKechnie). Lord (1918) mentions it nesting at Thetford 1912–1917, there was a colony in Sandwich 17 Jul 1919 (Farley 1919), and it was breeding in Jaffrey 1914–1924 (Danforth 1924). Bagge and Eliot (1937) include records of a bird flushed from its nest at Westmoreland (L.O. Shelley) 3 Jun 1924 and at Manchester 10 May 1937. At Concord, White (1924b, 1937) is the only writer who referred to it as even locally common, arriving as early as 12 May 1930 and lingering as late as 12 Sep 1937; he also mentions it breeding at Dunbarton and Canterbury. It was considered a rare and local summer resident chiefly in the southern part of the state (Goodhue 1922, Forbush 1929).

Records published in RNEB 1936–1949 include an early spring arrival of 10 May 1937 at Manchester (J. Provost),

latest in fall of 1 at Manchester 23 Oct 1938 (E.J. Goellner), and birds breeding at Fitzwilliam at 1050 feet elevation in Jun/Jul 1937 (W. Taber) and 2 pairs breeding at Andover May/Jun 1938 (K.C. Elkins). The severe winter of 1940–1941 decimated the New Hampshire and MA populations (Griscom and Snyder 1955) and there was only 1 report in New Hampshire from then to 1948. A few reports in 1948 and 1949 from as far north as Meredith and Sandwich.

1950 to present. Considered an endangered species in the state since 1987. Much of its habitat has disappeared, and severe winters such as 1990–1991 have reduced its population on its winter range. It is unpredictable as to where it will occur and may not arrive until late June or July. Has apparently been declining since 1900, especially from the 1940s into the late 1960s and early 1970s; only about 1 report every 3 years 1980–2005 (WAP 2005).

Spring. There have been 17 published reports in the 7–31 May period, 10 of which were 25–31 May. They were from 11 different towns from Durham and Keene to Hanover; 5 reports were from Jefferson. Of the 17 reports, 15 were before 1980.

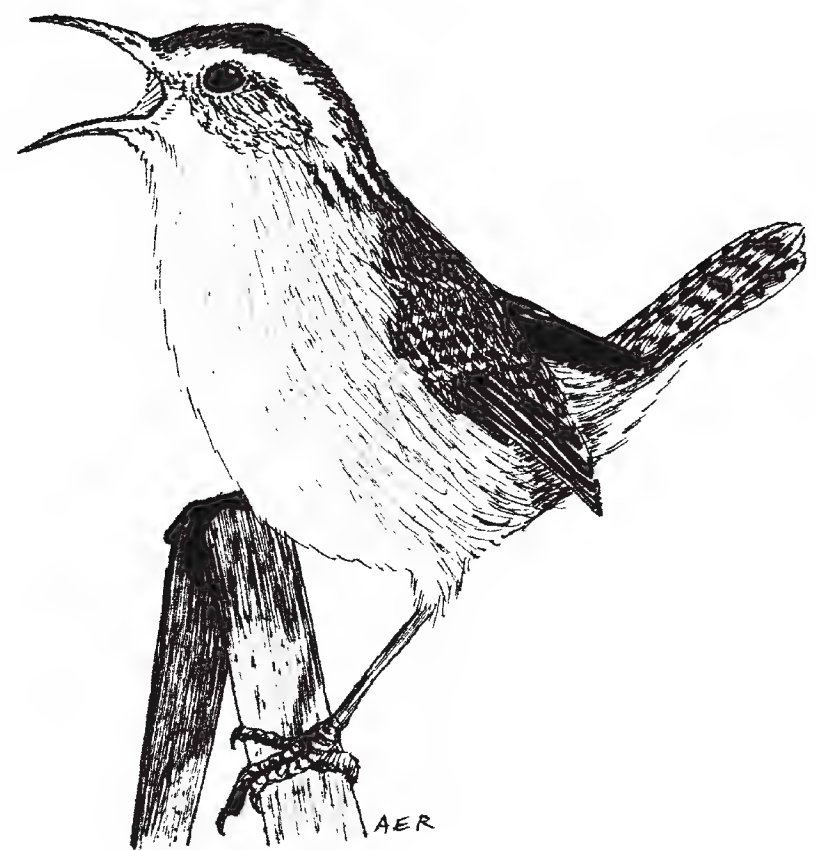
Summer. There have been 33 reports from 23 towns covering the entire state including 4 reports as far north as Colebrook. Of the 33 reports, 28 were from before 1980. A probable late migrant was at Star Island 7 Jun 1971 (R.W. Smart *et al.*). The *Atlas of Breeding Birds* project 1981–1986 included only 3 reports from priority blocks (2%), none at the confirmed level (Foss 1994), and there has been no evidence of breeding since.

Fall. Extreme dates at this season have been from 1 at Durham 12 Aug 2001 (S.R. Mirick *et al.*) to 1 at Stratham 28 Nov 2008 (S. Young). There have been 5 reports of single birds 10 September to 9 November since 1950: at Jefferson, Whitefield, New Hampton, at Star Island 21 Oct 2007 (B.Griffith *et al.*), and at Hopkinton 9 Nov 1963 (Buelle *et al.*).

Marsh Wren *Cistothorus palustris*

Status. An uncommon spring and fall migrant and uncommon and local summer resident in cattail marshes, with stragglers remaining into early winter.

Early reports to 1950. It was not known from the state in the 1800s (Goodhue 1877a; Stearns 1887, 1922; Minot 1895; Allen 1903, 1909; Forbush 1929). It apparently was a common breeder in parts of MA through the 1800s, but in nearby ME it first occurred as a breeder about 1920 (Palmer 1949). While it may have been present earlier and migrants were certainly passing through on their way to ME, the earliest reports we have are a nest record for Manchester in 1925 (unpublished USFWS data in Foss 1994), 1 at Hanover 29 May 1937 (W. Vaughn, RNEB),



and 1 there 18 May 1940 (R. Wattles). Other RNEB reports were nearly annual 1943–1949, peak counts rising from 6 at Exeter 18 May 1947 (T. Richards) to 12 at Kingston 1 Jun 1949 and 16 at Alton 5 Jun 1949 (both T. Richards). The latter reports were the basis for it being considered common in suitable cattail marshes by the late 1940s (Foss 1994).

1950 to present. Apparent increase to about 1960s, possibly due to more extensive field work and an increase in observers, followed by a significant decline. Population trend listed as unknown by Hunt (2012).

Spring. The earliest known records are at Hampton 25 Apr 2004 (M.G. Harvey), 2 there 28 Apr 1968 (V.H. Hebert), 1 at Peterborough 1 May 1955 (W.P. Hill *et al.*), and at Rye and Exeter 1 May 2007 (S. Young *et al.*). Peak migration period is the first 2 weeks of May, and mean first arrival is 13 May. Half of the first reports are typically from the coastal region. An early northern arrival was at Jefferson 15 May 1998 (C.J. Martin). Latest migrant dates are 1 at White and Seavey Islands 2 Jun 1980 (A.C. Borror) and at Rye 5 Jun 1991 (T.H. Arter).

Summer and breeding. At least a dozen breeding sites were reported 1950–1969 and the numbers of birds and colonies increased (Foss 1994, NHBR). North of the mountains, the first records were in 1958 near Jefferson with more records in 1962 and still more in the 1990s (Richards 2000). Since 1975 the total number of birds statewide has been decreasing. The *Atlas of Breeding Birds* project 1981–1986 reported breeding only in 7 priority blocks, primarily in the south and east and none north of the White Mountains, but by 1995 it was being reported regularly as far north as Errol. At least 6 singing males were at a marsh in North Sandwich for several years up to 2009 (R.S. Ridgely). New Hampshire BBS

data show a significant decline in the average population trend of about 6.9% per year in 1966–2009 and 1999–2009 (Appendix IV) though the credibility of such data for this local and secretive species is questionable. Peak counts include 21 at Stratham 23 Jul 1993 (A. and B. Delorey), 34 at Exeter 30 May 2004 (M.G. and R. Harvey), and 30 at Hampton 30 Jul 1967 (R.W. Smart, H.C. Anderson).

Fall. August reports of up to 6–10 birds may include some migrants, but peak migration period is from mid-September into early October. A migrant was at Star Island 12 Sep 1999 (R.W. Suomala *et al.*). Most late October reports are from the coast as are all November reports. Latest known fall records are 1 at Greenland 30 Nov 2008 (S.R. and J. Mirick), 2 at Exeter 29 Nov 1998 (K. Prazar *et al.*), and at Exeter 29 Nov 1970 (D.W. Finch).

Winter. Most reports from near the coast. CBC reports include 1 at Rye 28 Dec 1957 (K.C. Elkins), 1 at Nashua in 1995, and on the coastal CBC in 1990, 1992, 1994, 1995, 1998, 2000, and 2006. January dates include Newington 18 Jan 1995 (M. Suomala), Portsmouth 24 Jan 2010 (S.R. Mirick), and Portsmouth 25 Jan 2006 (S.R. and J. Mirick).

FAMILY POLIOPTILIDAE

Blue-gray Gnatcatcher *Poliioptila caerulea*

Status. An uncommon but increasing species in the southern half of the state, rare in the north, and an uncommon breeder south of the mountains. Has invaded from the south since 1900.

Early reports to 1950. The first report for the state was at Manchester 10 May 1900 (Batchelder 1900) though not accepted by Allen (1903). In 1900 it was considered an accidental straggler from the south, but in neighboring states it had occurred in VT by 1884 (Laughlin and Kibbe 1985), there were 6 records for MA by 1901 (Howe and Allen 1901), and ME's earliest was 1878 followed by 2 others before 1900. After the 1900 report, the next known New Hampshire records were of single birds reported to Goodhue (1922) at Franklin, at Manchester 26 Apr 1938 (F. Kozaka), at Manchester 12 May 1939 (E.J. Goellner), at Exeter 2 May 1946 (L. Scudder *et al.*), at Dunbarton 9 May 1947 (Mrs. F.F. Sanders—the same year that 21 were recorded elsewhere in New England that month), and at Sandwich 12 May 1948 (T. Richards). By the 1940s it was occurring regularly in all 3 abutting states but had not yet been proved to breed in any of them.

1950 to present. Very significant increase and onset of nesting in the state. Population trend in hardwood and mixed forest listed as uncertain by Hunt (2012).

Spring. Earliest known spring arrivals are single birds at Sanbornton 11 Apr 2000 (L. Bardush), 13 Apr 1998 at Kensington (D.B. and T. Donsker), and at Brentwood 16 Apr 2006 (S.R. and J. Mirick *et al.*). Usual first arrivals appear in the last 2 weeks of April; mean first arrival is 27 April in 1960–2008 but is 21 April in 1990–2009. Northernmost reports have been a pair Monroe 5–6 May 1981 (R.B. Emery), 1 at Errol 25 Apr 1998 (R.W. Suomala), and 1 at Lake Umbagog 29 May 1990 (S.B. and M. Turner). Typical one-day counts are 1–3; peak known counts are 5 at Rye 23 Apr 1995 (R. Bickford), 8 at Dunbarton 6 May 1995 (R.A. Quinn), 6 at Nottingham 18 May 1998 (A. and B. Delorey), 10 at Windham 31 May 2003 (M.G. Harvey), and 6 at Hinsdale 28 Apr 2006 (E.A. Masterson).

Summer and breeding. There are a few summer reports of multiple birds, possibly family groups: 6 at Hinsdale 29 Jul 2007 (E.A. Masterson) and 5 at Nottingham 16 Jun 1996 (D.J. and S. Abbott *et al.*). The first documented nesting was at Squam Lake, Holderness, in Jun 1965 (Ridgely 1977); again in Holderness in 1970 when 2 pairs with young were found (J.R. Kellogg *in* Hebert 1970); then in Weare and Hancock and a probable nesting at Campton Bog in 1976 (Foss 1994). By 1985 there were several nesting locations in the Squam Lake/Sandwich area. Two birds were seen in Holderness 9 Jun 2008, 1 of which was gathering nesting material (A.J. Vazzano). The *Atlas of Breeding Birds* project 1981–1986 reported breeding evidence in 21 priority atlas blocks (12%) ranging from a group in the Squam Lake and Ossipee areas south through the lower Connecticut River valley and the 5 southeastern counties (Foss 1994). Despite field reports of a general increase in the state, New Hampshire BBS data show very sharp declines in the population trend averaging about 14.8% per year in both 1966–2009 and 1999–2009 which also conflict with a regional trend of +8.0% per year; the reasons for this discrepancy are not apparent (Appendix IV). The elevation record is 1 near the top of Mt. Sunapee at about 2700 feet (T. Richards).

Fall. Reports through August are thought to be post-breeding dispersers or very early migrants. More probable migrants are found from the last few days of August through September: 1 at Hanover 30 Aug 2004 (S.R. Sturup), and single birds at Star Island 18 Aug 1981 (J. Ginnaven) and 18 Sep 1994 (P.D. Hunt *et al.*). Latest known fall records are 1 at Rye 28 Oct 2001 (M. Patten) and 1 at Somersworth 20 Nov 2008 (L. Chase). The 4 latest known fall reports have all been since 2000.

FAMILY REGULIDAE

Golden-crowned Kinglet *Regulus satrapa*

Status. A fairly common spring and more common fall migrant. It is a fairly common summer resident in the mountains and northward but rare in the southwest highlands and the south in general. Winter numbers are variable.

Early reports to 1950. The “Crested Wren, *Motacilla regulus*,” of Belknap (1792) surely belongs here because this kinglet most closely resembles the Goldcrest of Europe whose specific epithet Belknap used. J. Dwight collected a male at Hollis 12 Apr 1875 (AMNH #377621). The first nest ever reported anywhere contained 6 young and was found in the White Mountains 16 Jul 1875 by H. D. Minot (Stearns 1887). It may have been more numerous in the southern parts of the state before widespread deforestation 1750–1880 (Forbush 1929). Maynard (1871) and Goodhue (1877a) thought it a common breeder and common to abundant migrant, especially in fall. However, W. Brewster noticed that it went from being an uncommon summer resident and abundant fall migrant at Lake Umbagog to much less common after the 1894–1895 winter; he hypothesized that many had been killed on wintering grounds as had Eastern Bluebirds (Griscom 1938). But its population apparently recovered quickly since Dearborn (1898, 1903) called it an abundant seasonal migrant again in Belknap and Merrimack Counties and the coastal region, usual in winter, and reported a nest at Alton 26 Jul 1889. Allen (1903) thought it a common migrant breeding to 4860 feet in the White Mountains, and Comey (1904) found it breeding only above 700 feet at Holderness. Marble (1907) found it breeding at Crawford Notch and a common migrant there in September. Thayer (1912) and Danforth (1920) thought it a very common migrant which also bred on Mt. Monadnock sparingly. Wright (1911) found it breeding at 1700 feet elevation in the Jefferson region and observed a migrating flock of 50+ near there 4 Oct 1904. At Concord, White (1924b, 1937) referred to it as having recovered from an “extraordinary” decrease several years before (1894–1895 winter?) but had become a common seasonal transient again.

Reports published in RNEB 1936–1949 show the earliest arrival of migrants south of the mountains on 1 Sep 1948 at New Hampton (V.H. Hebert), usual arrival by the end of September and migrants as late as 15 Nov 1939 at Manchester (E.J. Goellner). No spring reports were published.

1950 to present. Population trend listed as uncertain by Hunt (2012).

Spring. Northbound migrants are suspected by mid-March, suggestive dates being 3 at Errol 10 Mar 1956 (T.

Richards *et al.*), 6 at Deering 12 Mar 1995 (I.C. MacLeod), 4–5 at Londonderry 14 Mar 1971 (H.A. Reynolds), and 15 at Littleton 18 Mar 1961 (H.C. McDade). Peak migration period is the last 2 weeks of April and the first week of May. Peak counts are 30 at Nashua 10 Apr 1995 (A. Delorey) and 25+ at Bedford 23 Apr 1967 (W. Riehl). Late migrant dates include “a flock” at Hanover 12 May 1956 (*fide* E.H. Sherrard) and 1 banded at Star Island 28 May 2000 (R.W. Suomala). Numbers and timing of spring migrations are somewhat variable and are probably weather-related or due to conditions on the wintering grounds. Early flights are occasionally impacted by severe weather: several were found dead 14 Apr 1951 at the base of the headwall of Tuckerman’s Ravine, Mt. Washington, where it was very cold with visibility in snow less than 50 feet (Wade 1952).

Summer and breeding. A common summer resident in the White Mountains and northward and locally distributed to the south in the western highlands. In the *Atlas of Breeding Birds* project 1981–1986, evidence of breeding was found in 41% of priority atlas blocks, generally found from 1000–3000 feet elevation and higher (J. McDermott *in* Foss 1994). Ridgely (1988) found it breeding only above 2000 feet in the Squam Lake area, but since then it has been found at lower elevations there (R.S. Ridgely pers. comm.). Pittsburg frequently has high breeding density with high counts in summer: 33 in 1955 (E. and H. Halberg), 40 on 17 Jun 2000 (A. and B. Delorey), 30 on 20 Jul 2003 and 53 on 1–3 Jul 2001 (both E.B. Nielsen). However, populations have fluctuated widely on occasion: “57% decrease at Pittsburg, Lincoln and Errol” in 1958, “low in numbers” in 1959, but “up 500% statewide” in 1967 (NHAQ). A 56% decline occurred in 1976–1978 in the White Mountains (Sabo 1980). New Hampshire BBS show almost no change (+0.3% per year) in population trend in 1966–2009 but a very sharp decline of 12.1% per year in 1999–2009, the latter a much sharper decline than regionally or nationally (Appendix IV). While the long-term pattern is stable as far as breeding areas and numbers are concerned, there are fluctuations in shorter time periods.

Fall. Migration is highly variable and is composed of several parts. From August to early September, concentrations occur in the mountains and northern areas with counts higher than breeding populations: 70 at Beans Grant 8 Aug 2001 (C. Marantz *et al.*) and 40 on Mt. Jackson 22 Aug 1992 (J.W. Berry). In the Lake Umbagog and Pittsburg areas, the highest counts for the year occur: 50 at Umbagog 6 Sept 1965 (R.C. Hebert), 59 there on 26 Aug 1999 (R.A. Quinn), 50 at Pittsburg 6 Sept 1954 and 78 there 31 Aug 1956 (E. and H. Halberg). These high counts may be due to postbreeding flocking and/or arrival of migrants from the north. Elsewhere statewide, peak migration period is the last week of September and

the first 2 weeks of October. Peak counts of 40 or more from Star Island: 60 on 30 Sep 2007 (E.A. Masterson *et al.*), 40 on 30 Sep 1995 (A. and B. Delorey), and 60 on 7 Oct 1973 (E.W. Phinney). Mainland coast high count is 50 at Rye 18 Oct 1971 (E.W. Phinney). Late migrants occur through November such as 15 at Kensington 29 Nov 2002 (G.W. Gavutis, Jr.). An unusual late concentration was 56 at Crawfords Purchase 6 Nov 1994 (A. and B. Delorey).

Winter. From 1987–2009, the total number reported on CBCs statewide ranged from 44 to 773 with a mean of 215. Three reports were over 700 and 5 were below 100. High counts for individual CBCs are 80 at the coast (1987), 128 at Hanover (2002), 118 at Laconia (1998), 64 at Pittsburg (2009), 88 at Errol (2010), 116 at Peterborough (2002), and 133 at Littleton (2007, the highest ever in the state). The wide range of total numbers and locations illustrates the great variation in winter numbers. In 2002 there was an unusual concentration reported on the Connecticut River valley CBCs: 116 at Peterborough, 60 at Keene, and 128 at Hanover. Reports from January and February are usually low compared with CBC numbers, likely due to reduced coverage and reduced reporting since it is a regular winter species in low numbers.

Ruby-crowned Kinglet *Regulus calendula*

Status. A common spring and fall migrant; a fairly common breeder in the mountains and northward and rarely at higher elevations in the southwest.

Early reports to 1950. Dwight collected a pair at Hollis 17 Apr 1876 (AMNH #377841–377842). Most early writers considered it a common spring and occasionally very common fall transient but unknown as a breeder (Goodhue 1877a and 1922 at Webster; Dearborn 1898 and 1903 in Belknap and Merrimack Counties and the coastal region; Allen 1903 statewide; Abbott 1906 at Concord; Thayer 1912 at Dublin; White 1924b and 1937 at Concord). The first known summer record south of the mountains was 1 at Holderness 15 Jul 1903 (Comey 1904), and L. O. Shelley saw 1 at East Westmoreland on each of 26 and 31 Mar 1936 (Bagg and Eliot 1937). Contrastingly, at Lake Umbagog 1871–1909 W. Brewster found it an uncommon transient, primarily in fall (Griscom 1938). At Hanover, Lord's (1918) early spring arrival date was 16 April, his average arrival being 21 April in 1912–1917. Neighboring states had little breeding data at this time: 1 report for ME in 1897 (Palmer 1949) and 1915, 1920, and 1932 reports in western MA (Bagg and Elliott 1937).

Records published by RNEB 1936–1949 provide earliest spring arrivals on 2 April in 1937 at Hanover (Mrs. Mills) and at New Hampton in 1945 (V.H. Hebert), peak spring migration period from the last 2 weeks of April through

the first week of May, and latest migrant in spring on 23 May 1939 at Manchester (E.J. Goellner). The only reported summer record was of a bird at Ossipee 30 Jul through 1 Sep 1945 (E.E. Pratt). Early fall arrival south of the mountains was 15 Sep 1946 at New Hampton (V.H. Hebert), peak migration period was the first 2 weeks of October, and latest in fall was 18 Nov 1937 at Manchester (E.J. Goellner); a straggler was at Concord 4 Dec 1948 (J.B. Grant).

1950 to present. Its breeding population is listed as declining by Hunt (2009b) despite the fact that it seems likely to continue expanding its range in spruce-fir forest as that habitat increases.

Spring. Earliest known spring arrivals since 1950 are 1 at Hampton Falls 25 Mar 1973 (E.W. Phinney *et al.*), 1 at Westmoreland 30 Mar 2006 (R.E. Ritz), 1 at Dummer 2 Apr 1997 (C. Martin, R.W. Suomala), and 1 at Canterbury 2 Apr 1998 (R.A. Quinn). Mean first arrival is 13 April, and general arrival is about 18 April with peak numbers in early May. Typical daily counts are 1–20; peak counts are 30 at Stratham 3 May 1975 (D.J. Abbott), 40 at Star Island 3 May 1975 (D.J. Abbott *et al.*), and 100 including some residents at Pittsburg over a two-mile route 11 May 1958 (R.C. and V.H. Hebert). More recent high counts include 18 at Windham 19 Apr 2003 (M.G. Harvey) and 23 at Weare 18 Apr 2004 (P. Newbern). Late migrants are often found on offshore islands: Star Island 15 May 2008 (E.A. Masterson *et al.*) and White and Seavey Islands 18 May 2007 (D. Hayward *et al.*). Latest spring dates average 14 May, and extreme late migrant dates are 1 banded at Rye 25 May 1971 (E.W. Phinney), 1 at Star Island 6 Jun 1971 (ASNH field trip), 1 at Portsmouth 7 Jun 1969 (J.E. Cavanagh), and 1 at White and Seavey Islands 17 Jun 1998 (J.B. Ellis *et al.*). Generally, since 1950 it has arrived slightly earlier and its peak numbers have been lower.

Summer and breeding. There was a scattering of summer records south of the mountains 1938–1945, but the first confirmed breeding record there was at Rumney 18 Jun 1947 by T. Richards (Foss 1994). The first summer report in the Jefferson region was 10 Jul 1953 at Pondicherry Refuge (T. Richards) after which its numbers grew rapidly in the Jefferson area: on 20 Jun 1962, between Jefferson Meadows and Pondicherry Wildlife Refuge, 12 singing males were found (Richards 2000). It expanded its range both southward and in population density 1950–1990. It was “fairly common in softwood swamps” in Pittsburg 25 May 1950 (T. Richards) and 44 were found there 7–8 Jun 1958 (R.C. and V.H. Hebert). More recent high counts from Pittsburg are 25 on 24–25 Jun 1999 and 39 on 18–21 Jun 2007 (both E.B. Nielsen). The species also extended its range southward at higher elevations with breeding season reports from Mt. Kearsarge in Wilmot 6 Jun 1994 and 18 Jun 1975 (K.C. Elkins) and

a singing male there 17 Jun 2009 (R.A. Quinn, J.W. Berry); and in the western highlands at Mt. Piermont (Foss 1994). By 1965–1990, it was regularly found in the mountains, often above 3000 feet elevation in the Franconia, Presidential, and Carter ranges (R.P. Fox *et al.*); and it was at 3800 feet on Mt. Washington 12 Jun 1960 and at 4500 feet on the Carter Range (T. Richards *in* Foss 1994). Despite the range extensions, New Hampshire BBS data show a long-term negative population trend of 1.8% per year in 1966–2009 and 2.1% per year in 1999–2009, tracking the regional trend of 5.2% per year in 1999–2009 (Appendix IV). In the *Atlas of Breeding Birds* 1981–1986, it was confirmed or thought probably breeding in 23 priority atlas blocks, only in the mountains and in Coos County (Foss 1994). Ridgely (1988) found it an uncommon breeder at 1800–3500 feet elevation in evergreens in the Squam region.

Fall. Some August reports possibly represent postbreeding dispersals, such as 3 at Plymouth 13 Aug 1975 (S.A. Fogleman), at Plainfield 14 Aug 1960 (R.J. Bradley), and Tamworth 24 Aug 1959 (J. Cole). First migrants are typically reported 10–20 September: 1 at Star Island 13 Sep 1999 (R.W. Suomala *et al.*). Peak migration period is the last week of September and the first 2 weeks of October. Peak counts in this period are 80 at Concord 27 Sep 2006 (P. Brown), 1000+ at Pittsburg 28 Sep 1956 (R.C. and V.H. Hebert), 15 at Star Island 30 Sep 2007 (E.A. Masterson *et al.*), 30 on Star Island 5 Oct 2008 (S.R. Mirick *et al.*), 50 at New Hampton 19 Oct 1975 (R.C. Hebert), 15 at Rye 11 Oct 2008 (P.D. Hunt), and 37 from Jefferson to Whitefield 17 Oct 1976 (R.J. Bradley). One was still as high as 4200 feet elevation on Mt. Lafayette 8 Oct 1973 (E. MacLean). Most southbound migrants that leave the state are thought to have gone by late October. Since the 1960s there have been scattered late November reports.

Winter. Late fall birds occasionally linger into December: Concord 11 Dec 2005 (R.A. Woodward), Northfield 30 Dec 2006 (P.D. Hunt), and Walpole 16 Dec 2006 (CBC). CBC data record that it was found only twice in the 1980s but was regular from 1992–2009. CBC reports came from Concord, Laconia, Manchester, the coast, Star Island, Keene, Nashua, and Lee, total statewide numbers ranging 1–7. Since 2000, it has lingered into January and February, perhaps due to warmer winters: Rye 21 Jan 2007 (S.R. and J. Mirick), Derry 24 Jan 2008 (E.A. Masterson *et al.*), Alton 13 Feb 2006 (M. and R. Foster) and Rochester 5 Feb 2007 (D. Hubbard).

FAMILY MUSCICAPIDAE

Northern Wheatear *Oenanthe oenanthe*

Status. Very rare visitor from the north. Single birds have

occurred 10 times, 8 of which were in September, once in June. Three were found at the coast, the others inland.

Reports. At Pembroke 22 Sep 1962 (E. Ring); at Odiorne Point, Rye 9–10 Sep 1972 (J.E. Cavanagh, L.G. Phinney, V.H. Hebert *et al.*; photo by D.W. Finch); at Dixville Notch 25 Sep 1981 (J.E. Cavanagh, H.C. McDade); at Seabrook 28 Sep 1982 (E.W. Phinney *et al.*); at Peterborough 18–20 Sep 1988 (S.R. Mirick *et al.*); at Bristol 7 Sep 1990 (V.S. Wright); at Pondicherry Wildlife Refuge 3 Jun 2001 (D. Govatski, K. Dube, C. Bretton *et al.*); at Salem 12–14 Sep 2006 (M. Coskren *et al.*), and at Rye 16 Sep 2006 (D.J. Abbott *et al.*); 1 near the summit of Mt. Moosilauke near Franconia Notch in the White Mountains near 4800 feet on 11 Oct 2011 (M. and B. Lipson; photo), the elevation record for the state.

Remarks. The 2001 record was part of a large flight which brought 4 other birds to New England and 46 to the Canadian Maritime provinces between late May and early June. The 2 Sep 2006 reports were part of a flight that month which included 25 other records in eastern North America, among them 4 others in New England. This species breeds in Iceland, Greenland, northern Quebec and northern Labrador; it migrates back to western Europe and then south to winter in central-western Africa. ME records are 1 Sep 1913 and Jan 1934 (Palmer 1949) and now at least another 20 more records (ME-BRC website, P.D. Vickery pers. comm.). In MA, there were 1910 and 1954 records; from then to 2009 there were over 50 reports from August to November and 10 spring reports in May and June (Veit and Petersen 1993, BO database 2010). Ten accepted records in VT from 1981 to 2005 (C.C. Rimmer pers. comm.).

FAMILY TURDIDAE

Eastern Bluebird *Sialia sialis*

Status. Formerly very common but now a slightly less common breeding species in the southern part of the state; less common in the western highlands and very uncommon north of the White Mountains. It is a fairly common spring and fall migrant and a regular winter resident in the southern part of state.

Early reports to 1950. The first report for the state was that of Belknap (1792) who listed “Blue Bird, *Motacilla sialis*,” and the next were those of Daniel Osborne in spring at Dover 18 Mar 1860, about 22 Mar 1861, and 28 Mar 1869 (Earle 1963). Maynard (1871) reported it breeding at Lake Umbagog, and J. Dwight collected 4 at Hollis 22 Mar 1875, 11 Mar 1876, 26 Jul 1876, and 28 Jul 1876 (AMNH #377135–377138 respectively). At Lake Umbagog 1871–1909 W. Brewster considered it an uncommon summer resident in the New Hampshire part

of the lake but regular in migratory flocks in fall, his latest being 22 Oct 1886 (Griscom 1938). Goodhue (1877a) reported it very common at Webster, but in the winter of 1894–1895 very severe weather on the wintering grounds and snow during northward migration is thought to have reduced the population by 80+%. Its numbers had recovered in Belknap and Merrimack Counties by 1897 (Dearborn 1898) but recovery took longer in the north, and it was not common again at Colebrook and Lake Umbagog until 1903 and 1907 respectively (Griscom 1938). Allen (1903) found it common again in the Saco River valley by 1903, and Howe (1901–1903) considered it a moderately common summer resident near Bridgewater. But Dearborn (1903) said it was becoming uncommon near Durham because of nest site predation by House Sparrows. Marble (1907) and Wright (1911) reported it still common in Crawford Notch and the Jefferson region respectively, but Thayer (1914) thought it only fairly common in variable numbers near Keene and Dublin and thought it had declined there since about 1885.

Several writers (Dearborn 1898, Forbush 1929, Bent 1949) noted that by the 1880s this species began to use more man-made nest sites than the traditional old woodpecker holes, tree cavities, and dead trees in Beaver ponds. But by the 1920s competition from the introduced European Starling began to have an impact in some parts of the state, though it was still a common summer resident at Webster (Goodhue 1922) where his earliest arrival was on 28 February. At Concord, White (1924b, 1937) called it only fairly common; his latest in fall was 4 Nov 1924.



Reports were published annually by RNEB 1936–1949 though they were almost exclusively early arrival dates and late fall dates. Earliest was 1 Mar 1938 at Manchester (E.J. Goellner) though in some years it was not reported until the third or last week of March. Despite severe weather on the wintering grounds in 1940 which reduced the summer population for the next few years, peak spring count was 65 at Hanover 3 Apr 1941 (R.L. Weaver), and northernmost report was at Woodsville 15 Mar 1943 (S.G. Emilio). The elevation record for the state is a pair at Lake of the Clouds on Mt. Washington at 5050 feet 19–26 Jun 1940 (S.K. Harris), the only report in 1940 following severe winter and early spring weather which sharply reduced the population as it had in 1894–1895. Peak fall migration period was the last 2 weeks of September and peak counts were 75 at Hanover 24 Sep 1939 (R.L. Weaver) and 75 at Jackson 8 Oct 1944 (F. Burnett). By the late 1940s it was being reported regularly into the last week of October and latest fall record was 1 at Manchester 8 Nov 1939 (E.J. Goellner). The placement of nest boxes just for Eastern Bluebirds, especially in areas away from numbers of House Sparrows and European Starlings, has helped its numbers recover losses: at Hanover 50 houses produced 106 young (Weaver 1942a). One banded in Manchester 26 Jul 1932 was recovered in Sharpsboro, North Carolina, 14 Feb 1933 (Bent 1949).

1950 to present. After a low point in the 1940s to around 1990, its numbers began to increase again, especially in late fall and winter.

Spring. The earliest spring arrivals are often obscured by the presence of overwintering birds. After being scarce in the springs of 1958–1960 following severe weather on the wintering grounds in 1958, total spring reports in the 30–40 range began again by the 1980s. Since this species typically does not migrate in flocks in spring, high counts of migrants rarely exceed 6–8 birds. First migrants are suspected by the last week of February, general arrival is typically by the second week of March, and peak spring migration period is usually the last 2 weeks of March. Extreme late migrants cannot be distinguished from summer residents.

Summer and breeding. The *Atlas of Breeding Birds* project 1981–1986 documented it being widely distributed in the southern half of the state and in the Connecticut River valley north to the Jefferson region but very local farther north and absent from the White Mountains (Foss 1994). New Hampshire BBS reports and editorial comments in the NHBN and NHAQ show sharp declines in 1958, 1966, and 1979, followed by slow partial recoveries. New Hampshire BBS data show small increases in population trend averaging about +1.5% per year for 1966–2009 and 1999–2009 (Appendix IV). Robbins *et al.* (1989) reported it to have decreased 90% in eastern North America 1940–1980, though its numbers began to

show modest increases locally as early as 1977 (Ridgely 1977). Allison and Allison (1979) still thought it uncommon to rare near Dublin. It was considered threatened from 1979 (Smith 1979) until removed from the threatened list in 1987 (*fide* R.W. Suomala). Cohn-Haft (1995) had only 4 records June to August as far north as the Second College Grant 1982–1986. However, the number of birds began to grow 1990–2005 and is described as increasing by Hunt (2010b). A trail of birdhouses in Rumney fledged 103 young in 1988 (G. Kent *in* Foss 1994).

Fall. Postbreeding flocks beginning to migrate are suspected by the last week of August. Peak migration period is typically the last week of September and the first 2 weeks of October. Notable peak counts from the Merrimack River valley are 35 at Canterbury 29 Sept 1992 (D. Stavros *et al.*) and 50 at Windham 27 Oct. 2002 (M.G. Harvey); from the Monadnock region are 45 at Hillsborough 2 Oct 1989 (D. and R. Webb) and 50 at Harrisville 13 Oct 1955 (W.P. Hill); and from the Connecticut River valley 48 at Hanover 30 Sept. 1996 (B. Schore) and 30+ at Charlestown 1 Oct 1963 (W.W. Kidder). Latest known record north of the White Mountains is 1 at Colebrook 28 Oct 1992 (W.M. Goodwill). Latest fall reports are usually from the coastal region and the southern major river valleys, most often by the last week of October. Prior to 1989, the latest reports were 1–10 November, but since then wintering birds have obscured possible later migrants.

Winter. An early record was at Rye 7 Jan 1962 (H.C. Anderson), but winter reports began to increase after the winter of 1989–1990; records came from Walpole and Durham in December and from Walpole and Hopkinton in mid-February. CBC counts increased dramatically over the next 13 years: 15 on 4 CBCs in 1990–1991 including Laconia; 13 on 3 CBCs 1991–1992 but 50 others later in the winter (*i.e.* in January and February); 10 on 2 CBCs 1992–1993 and 29 others later in the winter; 3 on 1 CBC 1993–1994 and 97 others later in the winter; 47 on 4 CBCs in 1994–1995 and 22 others later; 80 on 5 CBCs 1996–1997; 124 on 5 CBCs 1998–1999; 233 on 8 CBCs 1999–2000; 137 on 6 CBCs 2000–2001; 155 on 7 CBCs 2001–2002; and 184 on 7 CBCs 2002–2003. Thus this species has become a regular winter resident in the southern part of the state since 1990.

Townsend's Solitaire *Myadestes townsendi*

Status. Very rare visitor from the northwest. Eight reports: 3 first reported in December, 1 in January, 1 in February, 2 in October, and 1 in April.

Reports. The first state report was on the Coastal CBC in Dec 1981 (C.A. Federer). Subsequent reports were on the Errol CBC 26 Dec 1988 (D.J. and S. Abbott *et al.*); on the Coastal CBC in Newmarket 17 Dec 1994 which was sub-

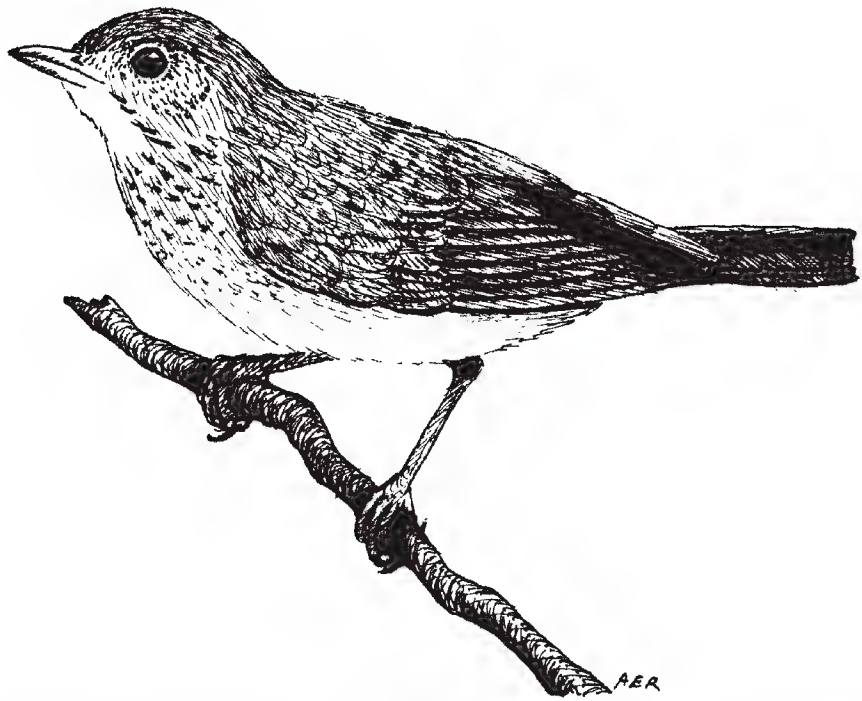
sequently seen until 25 Mar 1995 (*fide* P.D. Hunt); on the Frost Trail, Galehead Mountain, Franconia 6 Oct 1997 (S. Ricketts *et al.*); and 1 at Nottingham 9 Apr 2006 (P. Brown; photo). A report from Charlestown 20 and 24 Oct 1976 (W.W. and G.L. Kidder) was “accepted as probably correct” by K.C. Elkins. One seen in Bow 1–24 Jan 2011 (A. Winters, J. Pietrzak *et al.*; photo) and 1 at Strafford 11 Jan–6 Mar 2011 (S. and D. Kern, J. Lambert *et al.*; photo). There are about 17 records for MA (Veit and Petersen 1993, BO database 2010), 1 accepted record for VT (C.C. Rimmer pers. comm.), and over 8 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Veery *Catharus fuscescens*

Status. A relatively common spring and fall migrant and summer breeder up to about 1800 feet elevation; occurs statewide.

Early reports to 1950. Samuels (1867) considered it absent from the northernmost parts of the state, though Coues (1868) thought it a common summer resident in the south. The first specific records for the state appear to be 2 collected by J. Dwight at Hollis 24 May and 20 Jun 1875 (AMNH #376981–376982) followed by Goodhue (1877a) who called it a moderately common breeder at Webster. W. Brewster thought it local and uncommon at Lake Umbagog 1871–1909 though common not very far away over the border in ME (Griscom 1938). Howe (1901–1903) considered it a moderately common summer resident around Bridgewater, and Dearborn (1898, 1903) thought it common in summer in Belknap and Merrimack Counties and the Durham area. Allen (1903) called it a very common summer resident, especially in the southwestern part of the state and up into stream valleys on both sides of the White Mountain range. Marble (1907) reported that it bred at Bretton Woods and noted a migrant 10 Sep 1906 in Crawford Notch. Wright (1911) found it common in the Jefferson region up to at most 1800 feet. Thayer (1912) thought it common near Dublin from May to September, and at Hanover Lord's (1918) early spring arrival was 5 May and average was 12 May in 1912–1917. It was known to nest in West Claremont (Hunter 1922); and its habits were carefully studied near Holderness (Harding 1925). In 1926–1932 at Holderness 105 young were banded in breeding season but no returns were received (Day 1953). At Concord, White (1924b, 1937) considered it a very common summer resident, earliest spring arrival being 9 May.

Records published in RNEB 1936–1949 include the exceptionally early arrival in spring of 30 Apr 1947 at New Hampton (V.H. Hebert) while usual arrival was not until the first or even second week of May. A nest with 4 eggs was found as far north as North Stratford on 4 Jun 1943 (Mrs. Johnson). There were no August reports in the en-



tire 1936–1949 period and only 3 in September, the latest of which was 21 Sep 1947 at Andover (K.C. Elkins).

1950 to present. Breeding population listed as declining in hardwood and mixed forest by Hunt (2009b).

Spring. Earliest known arrival dates are at Keene 21 Apr 1985 (J.W. Harkins), Campton 22 Apr 2002 (J. Williams), and Walpole 23 Apr 1991 (R.E. Ritz). Arrivals have been getting earlier: in 1950–1980 there were 3 April reports; in 1990–2009 there were 7 April first arrivals. The location of first sighting also has shifted: in 1950–1980 the first reports were often from central New Hampshire but since then have been farther south, probably reflecting more observers in that part of the state. General arrival is usually by 10 May with a range of 7–14 May. Males tend to arrive before females. Peak spring counts probably including both migrants and residents have been 24 at Concord 23 May 2004 and 35 there 25 May 2009 (both R.A. Woodward). Latest known migration date is 2 at Star Island 24 May 1964 (ASNH field trip) though occasional reports into mid-June would not be surprising.

Summer and breeding. The *Atlas of Breeding Birds* 1981–1986 (Foss 1994) found at least possible breeding in 96% of priority blocks covering the entire state. Other high counts include 17 at Pawtuckaway State Park 1 Jul 1995 (A. and B. Delorey), 36 pairs at New Hampton in 1961 (R.C. and V.H. Hebert), 98 in New Hampton in 1965 (V.H. Hebert *et al.*), and 33 at Pittsburg 21 Jun 2000 (E.B. Nielsen). However, population numbers have fluctuated, sometimes widely. New Hampshire BBS data show a modest population trend decline averaging about 1.5% per year in 1966–2009 and 1999–2009, the regional trend has been a sharper 2.6% per year, and the national trend has been 1.5% per year (Appendix IV). Reasons for the decline are unknown but may relate to problems on its wintering grounds.

Fall. Highest counts come from migrating birds calling at night from late August into September. Typical reports include “2 migrating” at New Hampton 13 Aug 1968

(V.H. Hebert), 300+ at Littleton 20 Aug 1970 (R.J. Bradley), “500 in one-half hour” at Littleton 21 Aug 1976 (R.J. Bradley), and 150 at Durham 9 Sept 1995 (P.D. Hunt). These and other reports suggest that migration is statewide. Small numbers are reported after mid-September with the mean date for last bird reported since 1950 of 24 September. Latest known in fall are 2 at Durham 7 Oct 1991 (P.D. Hunt *et al.*) and 1 at Pittsfield 9 Oct 2009 (A.E. Robbins).

Winter. The only known record at this season is 1 at Bristol 10 Feb to 3 Mar 2001 (P. Moulton *et al.*).

Taxonomic note. The local breeding form in New Hampshire is nominate *H. f. fuscescens*. Newfoundland Veery *H. f. fuliginosus* breeds from southwest Newfoundland to central Quebec, wintering in South America, and presumably migrates in fall and spring through our state. It has been collected in MA, Rhode Island, and Connecticut, and is “readily identifiable in life” (Griscon and Snyder 1955) by its much darker brown color. The only known state report is 1 at Lee 14 May 1964 (O. Earle *et al.*).

Note on Gray-cheeked and Bicknell’s Thrushes.

The historical records of these 2 species in New Hampshire are impossible to tease apart because they were considered 1 species until recently (AOU 1995). The matter is further complicated by the facts that each has 2 slightly different color forms and that the most northeastern Gray-cheeked form breeds as far east as Newfoundland (Marshall 2004). Thus the latter form is probably a regular migrant through New Hampshire in both spring and fall and migrates south in fall east of the Appalachians, though the bulk of the species migrates south through the mid-continental United States. A long-distance migrant, part of the population winters as far south as Colombia, Venezuela, and northwestern Brazil (AOU 1998). In contrast, Bicknell’s Thrush is only thought to breed now in the Canadian Maritime provinces, and primarily on mountain tops in eastern New York, central and northern VT, New Hampshire, and central ME (AOU 1998). It also migrates south in fall east of the Appalachians but winters primarily in Hispaniola with a few reports from Cuba and Puerto Rico (Marshall 2001). There are differences in vocalizations and morphology, especially wing chord length, but sight identification in the field under less than perfect circumstances is problematic at best. Sight identification separation of the 2 species in postbreeding plumage including juveniles is even more challenging than in spring. Thus it is impractical to try to distinguish historical sight records of migrants away from reports at probable breeding locations in New Hampshire during breeding season. No attempt has been made here to do so. The species accounts for both species below are limited to data that can be defi-

nitely related to each of them such as specimens and a few carefully-vetted sight records by the NHRBC in the case of Gray-cheeked Thrush and primarily observations at breeding localities for Bicknell's Thrush. Spring and fall reports of both species since 1950 are thus lumped together as "Gray-cheeked/Bicknell's Thrush" below since there is essentially no certain way to distinguish the 2 species under normal circumstances.

Both species are very wary during migration as attested by the fact that several writers on New Hampshire bird distribution who were certainly aware of the existence of both forms had no reports of either at any season: Goodhue (1877a for Webster), Dearborn (1898 for Belknap and Merrimack Counties, 1903 for the Durham area), Howe (1901–1903 for the Bridgewater area), Marble (1907 for Crawford Notch), Lord (1918 for Hanover), White (1924b and 1937 for Concord), and Cohn-Haft (1995 for the Second College Grant).

Gray-cheeked Thrush *Catharus minimus*

Status. Presumably an uncommon spring and fall migrant to and from its breeding grounds in Siberia, Alaska, and northern Canada south to central Quebec and parts of Newfoundland (Marshall 2004). Its true status in New Hampshire is unknown.

Early reports to 1950. One collected at Lake Umbagog and thus possibly in New Hampshire by W. Brewster 3 Jun 1872 and assigned by him to the form *aliciae* which is now considered by most taxonomists a synonym of nominate *C. m. minimus*. Brewster also heard many migrant *aliciae* calling in the evening 10 Sep 1888 at Lake Umbagog and saw what he believed was *aliciae* there 2 Oct 1890 (Griscom 1938). One collected by G. H. Thayer on Mt. Washington 11 Jul 1884 (MCZ #324734) was determined as this species by Marshall (2001) who hypothesized that it must have "fallen short on migration and was accepted into the *bicknelli* breeding population." Allen (1903) reports 1 *aliciae* collected near Dublin 2 Oct 1899 by L. A. Fuertes, and Wright (1911) reports 2 seen near Lancaster 3 Oct 1908 that were carefully compared to Swainson's Thrushes present at the same time.

1950 to present. To be included here, a record has to be supported by a specimen, in-hand identification in connection with banding, an unequivocal voice recording, or a convincing detailed description. In spring, Gray-cheeked Thrush is thought possibly to be a later migrant than Bicknell's, rarely arriving in the state before mid-May and potentially passing through as late as early June. Spring records that probably belong here are 1 banded at Center Harbor 19 May 1972 (J.P. Merrill), 1 banded 28 May 2000 at Star Island (R.W. Suomala), and "a singing Gray-cheeked" at Star Island 30 May 2009 (S.R. and J. Mirick, E.A. Masterson *et al.*). The available fall reports

tend to cluster in the last 2 weeks of September and include single birds banded at Center Harbor on 29 Sep 1975, 14 and 18 Sep 1983, 22 Sep 1985, 19 Sep 1986, and 23 Sep 2010 (all J.P. Merrill); seen at Strafford 12 Sep 2008 (S. Young); seen at Nashua 23 Sep 1999 (A. Delorey); and seen at Pittsfield 6 Oct 2008 (A. Robbins). All of these reports were accepted by the NHRBC.

Bicknell's Thrush *Catharus bicknelli*

Status. A spring and fall migrant, at least to and from breeding localities, and local breeder in the White Mountains primarily, generally at elevations of 3300 to 4500 feet in stunted dense spruce-fir growth just below timberline. Its true status as a migrant in New Hampshire is unknown.

Early reports to 1950. The first state record was in Jun 1882 at Crawford Path (Torrey 1884) and later that summer the first specimens for New England were collected by W. Brewster at about 4000 feet elevation on Mt. Washington (Brewster 1883a). Chadbourne (1887) found it in summer at Tuckerman's Ravine on Mt. Washington and Torrey (1890) found it on Mt. Lafayette in Jun 1890. Brewster heard 1 at Lake Umbagog 7 Jun 1897 (Griscom 1938) which could have been a migrant. Allen (1903) reported it from the Sandwich Range on Trip Pyramid and Black Mountains, on Mts. Osceola and Tecumseh, on Mt. Chocorua 7 Jun 1900, and on Moat Mountain 17 Jul 1898 at only 2700 feet elevation. At Mt. Moosilauke it arrived 25–30 May, and W. Faxon and W. Brewster found a nest there with 3 fresh eggs on 22 June. Spaulding (1905) found a nest and eggs at Mt. Madison 22 Jun 1904, and Childs (1905) reported a nest 17 Jun 1905 at Mt. Adams. In the Jefferson region, Wright (1911) considered it "not an uncommon summer resident in the ravines above 2500 feet" and found it on Mt. Adams at 4400 feet, in Jefferson Notch, on Mt. Clinton 22 Jul 1909, on Mt. Starr King, and as late as 19 Sep 1900 in Tuckerman's Ravine. Corey (1913) reported it from Mt. Pemigewasset in the summer of 1912 and at 2800 feet elevation on Cannon Mountain 29 Jun 1913.

There were only 14 reports of "Gray-cheeked" Thrushes published in RNEB 1936–1949, 5 of which were of Bicknell's from breeding sites in the White or Sandwich Mountains in June and July. There were 3 reports of migrants in the 23–31 May period and 6 migrants or lingering breeders in fall from 11 Sep 1948 at Mt. Carrigain (G.W. Cottrell) to as late as 12 Oct 1940 at Canterbury (F.B. White); these 3 reports could pertain to either species.

1950 to present. A species of special concern in New Hampshire. Population trend listed as uncertain by Hunt (2012).

Summer and breeding. Typical arrival on breeding

grounds is 25–30 May. Early reports on breeding territories are at Mt. Lafayette 24 May 1953 (T. Richards), 3 at Cannon Mountain 24 May 2008 (M. Suomala), and at Cap's Ridge 25 May 1998 (S.B. Turner). Summer concentrations have been 20 at Franconia Ridge 10 Jun 1993 (M. Suomala), 10 at Bunnell Mountain in Columbia 25 Jun 2001 (R.A. Quinn), 25 at Bean's Purchase in the Carter Range 5 Jul 1972 (T. Richards), and 30+ on Mt. Lafayette in summer of 1963 (T. Richards); numbers on Mt. Lafayette declined beginning in the 1980s (R.W. Suomala pers. comm.). There is evidence of a modest range expansion since 1950. The first summer records for Coos County were at Dixville Notch 11 Jul 1951 and near Third Connecticut Lake 28 Jun 1952 (T. Richards). K.C. Elkins found birds on Mt. Kearsarge in Merrimack County 15 Jul 1950 for the first time since 1936, and the species was present there until 1977 but not since. It was also found on Mt. Monadnock, Mt. Sunapee, and Mt. Cardigan in the 1950s to the early 1970s, but disappeared from those areas by 1980. During the *Atlas of Breeding Birds* project 1981–1986, breeding was recorded as confirmed (6 atlas blocks), probable (3 atlas blocks), and possible (25 atlas blocks), nearly all of which were in the White Mountains, with a few farther north in Coos County. By 2005, over 80% of its range in New Hampshire was in the White Mountains, and there is a suggestion of a slight decline there 1992–2000 (WAP 2005). One was banded at Center Harbor 23 Sep 2008 (J.P. Merrill).

Lambert *et al.* (2005) have defined the optimum breeding habitat for Bicknell's Thrush as evergreen montane forests that are dominated by spruce and fir and where the mean July temperature approximates 13–17°C. Threats to this habitat are acid rain, increasing temperatures that permit the invasion of hardwoods with consequent increased competition from Swainson's Thrushes, and arrival of a European insect pest, the Balsam Woolly Adelgid (*Adelges piceae*). This insect has decimated hemlocks in the southern Appalachians, has reached New Hampshire, and is held in check only by severely cold winters.

Taxonomic note. Outlaw *et al.*'s (2003) DNA research suggests that Bicknell's Thrush separated from Gray-cheeked about 400,000 years ago; both have wing shapes adapted for long distance migration. The monograph by Marshall (2001) reviews the historical distribution pattern, voice, and the specimen record of *bicknelli* in exhaustive detail. The debate over whether both birds deserve full specific status is still not completely settled.

Gray-cheeked/Bicknell's Thrush *Catharus minimus/bicknelli*

Status. Here appears only spring and fall migration information that relates to both species collectively.

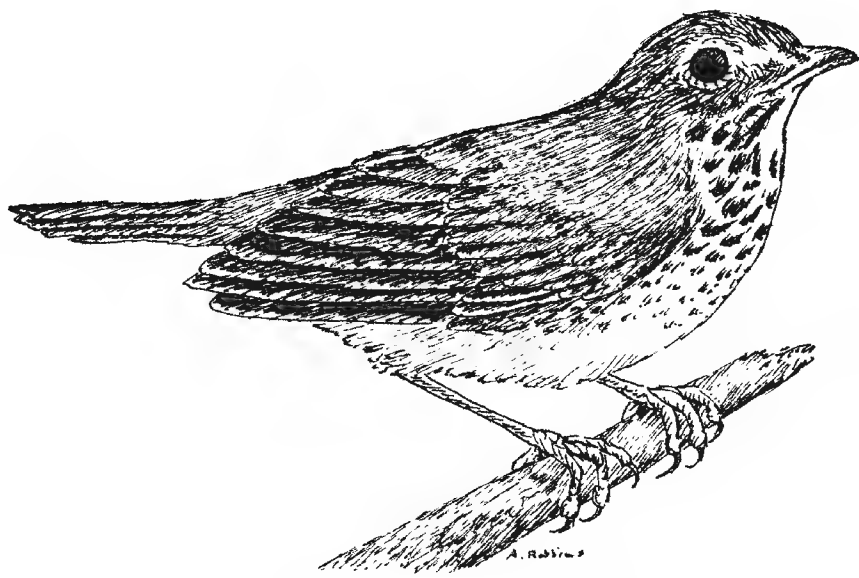
Spring. The earliest known spring arrivals are 1 at Durham 23 Apr 1983 (M.L. Davis *vide* V.H. Hebert) and 1 and 2 birds at White and Seavey Islands 28 and 29 Apr 2005 (M. Barney, D. Hayward). Inland reports include “5+ migrating” at New Hampton 12 May 1971 (R.W. Smart), Boscawen 14 May 1994 (A. and B. Delorey), Durham 15 May 1999 (D.B. and T. Donsker), Nottingham 19 May 1996 (D.B. Donsker *et al.*), Concord 25 May 2009 (R.A. Woodward), Hanover 27 May 2004 (S.R. Sturup), and Northfield 31 May 2004 (P.D. Hunt). Coastal reports include White and Seavey Islands 14 May 2004 (M. Barney *et al.*), 75 heard migrating at night at Portsmouth 20 May 1971 (E.W. Phinney), 1 at Star Island 31 May 2004 (M.G. Harvey *et al.*), and White and Seavey Islands 31 May 2005 (M. Waniga, R.W. Suomala).

Fall. Southbound migration begins by mid-August, often extends to very early October, and includes both species, both often migrating together. Migration occurs along a wide front, primarily inland, most often recorded in the form of many birds calling overhead at night. Reports include 636 heard at New Hampton 12 Aug 1961 (R.W. Smart, V.H. Hebert), “first migrants” heard at New Hampton 17 Aug 1960 and “birds migrating” at New Hampton 21 Aug 1958 (both R.W. Smart, V.H. Hebert), seen at Epsom 29 Aug 1994 (P.D. Hunt *et al.*), 250 heard at Littleton 10–11 Sept 1964 (R.J. Bradley), 500 heard at New Hampton 17 Sep 1961 and 251 heard at New Hampton 22 Sep 1959 (both R.W. Smart, V.H. Hebert), seen at Nashua 23 Sept 1999 (A. and B. Delorey), last heard migrating at New Hampton 26 Sept 1960 (R.W. Smart), 25 heard at Windham 26 Sept 2003 (M.G. Harvey), seen at Gilsum 30 Sep 1991 (M. Wright), seen at Bradford 9 Oct 1991 (F. Sladen), seen at Enfield 9 Oct 1996 (P.D. Hunt), and seen at Lyman 15 Oct 2004 (S.B. Turner). The few available coastal sight reports include 1 at Star Island 30 Sep 2007 (E.A. Masterson *et al.*), 3 there 6 Oct 1968 (R.W. Smart), 2 at Portsmouth 6 Oct 2000 (S.R. Mirick *et al.*), 1 at Seabrook 9 Oct 1966 (H.C. Anderson), and 1 banded at Rye 16 Oct 1971 (E.W. Phinney). An exceptional late report by an experienced bander is 1 well observed at Bedford 19 Nov 1980 (J.H. Kennard).

Swainson's Thrush *Catharus ustulatus*

Status. A common migrant and breeding species in the White Mountains and northward, occurring between 1500 and 3500 feet elevation.

Early reports to 1950. This species may have been less common in the mid-19th century than later because Samuels (1867) did not record it, and Goodhue (1877a) thought it rare at Webster, though he found 1 nest. However, W. Brewster found it an abundant resident and common migrant in the Lake Umbagog region 1871–



1909, by far the commonest thrush present in breeding season (Griscom 1938). Faxon and Allen (1888) called it locally common in Bethlehem and Franconia. Dearborn (1898) considered it an uncommon transient in Belknap and Merrimack Counties though he noted a nest in Franklin, and in the Durham area (1903) he thought it a rare migrant, having only 1 record 22 May 1900. Allen (1903) thought it a common migrant and summer resident from the White Mountains northward but rare south of there. Howe (1901–1903) found it an uncommon summer resident near Bridgewater, Marble (1907) thought it a common summer resident at Crawford Notch, and Lord's (1918) earliest arrival at Hanover was May 13 in 1912–1917. Thayer (1912) noted that it bred as far south as Mt. Monadnock and was a fairly common migrant at Dublin, especially in fall. Wright (1911) found it very common in the Jefferson Notch area, counting 71 singing birds on 21 Jun 1907. J. Dwight collected 1 at Snowville 16 Sep 1916 (AMNH #376759). At Concord, White (1924b, 1937) called it an uncommon migrant from 13–25 May and 24–30 September.

Records were published annually in RNEB 1936–1949, extreme early spring arrival being 1 at Manchester 2 May 1938 (E.J. Goellner) though peak migration period was the last 2 weeks of May. A singing bird as far south as East Wakefield 19 Jun 1949 (C.E. Smith) was considered unusual. In fall, earliest report away from known breeding areas is 1 at Andover 16 Sep 1944 (K.C. Elkins), latest is 1 at Hanover 16 Oct 1946 (L. Forsyth), and most fall reports fell in the last 2 weeks of September.

1950 to present. Breeding population essentially stable (Hunt 2009b) to a very modest increase.

Spring. Earliest known arrivals are at Mont Vernon 21 Apr 1984, (M. and R.W. Suomala), Jefferson 21 Apr 2002 (D. Govatski, C. Bretton), Bristol 24 Apr 1980 (V.S. Wright), and at White and Seavey Islands 28 Apr 2005 (M. Barney, D. Hayward). Mean first arrival 1950–2009

was 9 May. High counts include 20 at Portsmouth 23 May 1962 (J.E. Cavanaugh), 30 at Caps Ridge 27 May 2004 (M. Harvey *et al.*), and “many” calling at night at Portsmouth 21 May 1979 (D.J. Abbott). Usual arrival on breeding territories in the northernmost parts of the state is by month's end: 59 at Pittsburg 27 May 1960 (R.C. and V.H. Hebert). There is a regular migration along the coast which occasionally stretches into June: 7 at White and Seavey Islands 9 May 2000 (D. Hayward *et al.*), 1 there 16 May 2005 (M. Barney, D. Hayward), 1 there 17 May 2007 (D. and M. Hayward), 3 at Rye 25 May 1993 (A. and B. Delorey), 1 at Seabrook 26 May 2008 (S.R. and J. Mirick), 1 at Star Island 30 May 1968 (ASNH field trip), and 1 there 6 Jun 1971 (ASNH field trip).

Summer and breeding. The highest known summer counts date from the 1950s in Coos County: “105 in Pittsburg in 1957 doubling last year's count” (V.H. Hebert). However, declines were noted in 1958 and 1960, and in 1995–2004 counts seldom exceeded 20–40 birds even at localities such as Pittsburg. New Hampshire BBS data show a modest average population trend increase of +1.6% per year in both 1966–2009 and 1999–2009 (Appendix IV). Regional BBS data show a major decline from 1970–1985 to 1986–2001 (Lloyd-Evans and Atwood 2004) and the trend has been 1.7% per year in 1999–2009 (Appendix IV). The *Atlas of Breeding Birds* project 1981–1986 reported confirmed and probable evidence of breeding in 43 priority atlas blocks in the White Mountains and farther north (23%), but only 1 atlas block with confirmed breeding at Mt. Monadnock south of the White Mountains (Foss 1994). Six singing birds were found on Mt. Kearsarge in Wilmot 8 Jul 2007 (R.A. Quinn) but none were found there 17 Jun 2009 (R.A. Quinn, J.W. Berry). Areas south of the mountains known to have had breeding birds 1925–1975 reported only possible breeding in the western highlands. It has been suggested that the present warmer weather pattern and/or competition from the Hermit Thrush may have shifted the Swainson's Thrush's range farther north and to higher elevations since its breeding range overlaps Bicknell's at the latter's lower elevation and overlaps that of the Hermit Thrush and Veery at their higher elevations (K.C. Elkins *in* Foss 1994).

Fall. Earliest known migrants away from breeding areas are at New Hampton 2 Aug 1972 (R.W. Smart), Hopkinton 2 Aug 1976 (T. Richards), and at Concord 18 Aug 2006 (P.D. Hunt). Most early migrants and greatest numbers have come from inland river valley locations. In contrast to the spring, large numbers are often recorded of birds heard migrating overhead at night, most often in the first 2 weeks of September: 20,000 at New Hampton 13–14 Sep 1961 (R.W. Smart, V.H. Hebert), 5000+ at Littleton 9–10 Sep 1964 (R.J. Bradley), 2400 at New Hampton 3 Sep 1969 (V.H. Hebert), 1800+ at Portsmouth 3

Sep 1969 (E.W. Phinney), 34 at Enfield 15 Sept 1995 (P.D. Hunt), and 50 at Portsmouth 6 Oct 2000 (S.R. Mirick). Note the sharp drop in nocturnal counts since the 1960s. Latest known reports are 1 at Hanover 1 Nov 1962 (H. Weber), 1 at South Hampton 1 Nov 2006 (T. Bronson), 1 at Plymouth 8 Nov 1998 (J. Williams), and 1 at Enfield 15 Nov 1998 (P.D. Hunt).

Hermit Thrush *Catharus guttatus*

Status. A common spring and fall migrant, summer resident, and occasional winter straggler. It appears to have become more common since 1900.

Early reports to 1950. The “Thrush, *Turdus rufus*,” listed by Belknap (1792) very possibly belongs here, though he probably did not distinguish between this species and any of the other *Catharus* or *Hylocichla* thrushes present at the time. Maynard (1871) thought it uncommon in Coos County. One of the earliest reports was 1 collected at Rye 25 Jul 1872 (Brewster 1878), closely followed by a migrant at Hollis 12 Apr 1875 by J. Dwight (AMNH #376562); Dwight also collected a series of 8 specimens including juveniles at Campton Village in Jul and Aug 1885. Chadbourne (1887) reported 1 at 3300 feet elevation on Mt. Washington, and Goodhue (1877a) called it a common breeder at Webster. At Lake Umbagog 1871–1909, Brewster considered it an uncommon summer resident though an abundant migrant in fall (Griscom 1938). Dearborn (1898) called it a common summer resident in Belknap and Merrimack Counties and (1905) at Northfield, but not as numerous near Durham (1903) as in the Lakes Region. Howe (1901–1903) considered it a common summer resident near Bridgewater. Allen (1903) considered it the commonest thrush in summer in the Lakes Region and common in the western highlands; he also reported a specimen in the Acworth–Silsby Public Library taken as late in fall as 24 Nov 1883. Reports from southwestern New Hampshire are puzzling: G. H. Thayer (1912) thought it common near Dublin and Mt. Monadnock, but A. H. Thayer (1914) said it had declined at Keene 1885–1914. Marble (1907) thought it an uncommon summer resident at Crawford Notch, Lord’s (1918) early arrival date at Hanover was 2 April in 1912–1917, and Wright (1911) called it a common summer resident in the Jefferson region. At Concord, White (1924b, 1937) considered it a common summer resident and common seasonal migrant that appeared to have increased 1900–1924 and then declined slightly by 1937; his latest fall record was 8 November; the first known winter record was at Strafford 25 Jan 1925.

Records published in RNEB 1936–1949 show its earliest spring arrival on 29 Mar 1942 (M. Choukas) at Hanover and general arrival statewide by the end of the first week of April. In fall, migrants were typically noted by the last

week of September, and peak migration period was the second week of October, high count being 43 at Andover 13 Oct 1947 (K.C. Elkins). Latest report in fall was 1 at Ossipee 5 Nov 1937 (E.E. Pratt).

In summary, in 1900 this species appears to have been moderately common statewide south of the White Mountains and as far north as the Jefferson region in the Connecticut River valley. However it was scarce in the coastal region and not very common in most of Coos County. It may have begun to decline slightly south of the White Mountains shortly after 1900.

1950 to present. Has increased in both spruce-fir and hardwood/mixed forests (Hunt 2009b) as reforestation has progressed but the increase appears to be concentrated in the White Mountains and northward.

Spring. Earliest known reports of birds that may not have wintered: 1 at Chatham 1 Mar 2002 (R. Crowley), at Exeter 3 Mar 2009 (E. Ring), and at Sandown 4 Mar 2005 (C. Fermoye). Mean first arrival 1950–1989 was 12 April, but in 1990–2009 was 8 April, the earlier arrival time possibly related to warmer conditions. An early migrant, first arrivals generally appear in the southern third of the state near river valleys and the coast, and general arrival is typically by mid-April. Peak spring counts are in the last half of April: 9 at Salisbury 19 Apr 1992 (C. and C. Martin), 11 at Londonderry 14 Apr 1990 (H. Chary), 25 at Star Island 4 May 1975 (D.J. Abbott), and 90 at the coast 18 Apr 1965 (J.E. Cavanagh). Late migrant reports are 3 at Star Island 11 May 1975 (ASNH field trip) and 3 “still migrating” there 14 May 1967 (ASNH field trip). Mid- to late May coastal records may be birds bound for the Canadian Maritimes.

Summer and breeding. New Hampshire BBS data 1966–1993 overall show a fluctuating but declining pattern but include a marked increase 1983–1993 followed by another decline. Fluctuations and the declines are generally attributed to severe winters in the northernmost part of the species’ wintering range which extends into southern New England. Longer-term New Hampshire BBS population trend data show a small increase 1966–2009 (+1.8%) but virtually no change (0.3%) in 1999–2009 (Appendix IV). The *Atlas of Breeding Birds* project 1981–1986 reported evidence of at least possible breeding in 89% of the priority atlas blocks, but at slightly lower density south of the White Mountains and in the coastal region (Foss 1994). Hermit Thrushes may often have 2 broods and its song period often extends to mid-August. Ridgely (1977) considered it widespread and fairly common in the Squam Lake area, and Cohn-Haft (1995) called it a common breeder and migrant at the Second College Grant, an area where it was scarce a century earlier.

Fall. The earliest migrants could occur by early Septem-

ber but cannot be told with certainty from residents. An early high migrant count was 46 at Enfield 14 Sep 1995 (P.D. Hunt). Usual peak migration period is the middle 2 weeks of October: 25 birds near New Hampton 9 Oct 1955 (R.W. Smart), 20 at Sandwich 13 Oct 1998 (J. and D. Romano), and 12 banded at Rye 18 Oct 1970 (E.W. Phinney). An early fall snowstorm 2 Oct 1967 caused a fallout of migrants including 40 at New Hampton (V.H. Hebert) and 93 on the coast (L.G. and E.W. Phinney). Late migrants were 4 at Star Island 17 Nov 1973 (ASNH field trip).

Winter. There have been reports from mid-December through February since 1953 and reports have increased since 1990 with possibly a few birds surviving until spring. In 1990–1999 12 individuals were reported on CBCs in 7 years and only 3 times in February. In 2000–2009 it was reported on a CBC every year and averaged nearly 8 birds per year (76 for the decade); it was also reported in February every year in that decade, often in several towns. A few birds have probably overwintered 2004–2009.

Taxonomic note. The local breeding form in New Hampshire is *C. g. faxoni*. Newfoundland Hermit Thrush *C. g. crymophila* is a weakly-differentiated race that breeds only in Newfoundland and presumably migrates through the state in both spring and fall. In the opinion of Griscom and Snyder (1955) it is “inseparable from New England series nor can transients be picked out” from *faxoni*.

Wood Thrush *Hylocichla mustelina*

Status. A fairly common spring migrant and summer resident and regular fall migrant. It was first reported in the state in 1894, expanded in the state until about 1982 and has declined ever since.

Early reports to 1950. Though it may have been present a year or two earlier, the first acceptable state records are of 2 birds singing near Mt. Moosilauke 20 Jun 1894 and near North Woodstock 1 Jun 1895 (W. Faxon *in* Allen 1903). Earlier records from Franklin by G. Stolworthy in April of 1886 and 1887 and from Manchester (Farmer 1892b) have been discounted as misidentified Hermit Thrushes by Blake (1910) and Elkins (1957). Thayer (1912) apparently found it first near Dublin about 1895 where it had become uncommon, and it had occurred at Keene, Hancock, and Marlborough by 1903 (Allen 1903). Torrey (1900) reported 1 at Franconia 29 May 1899, and Allen (1903) observed 1 at Wonalancet 14 Jul 1899 and another at Intervale 5 Jul 1899. R. Hoffmann found it at Alstead in 1899 and 1900, and Batchelder (1900) thought it a summer resident near Manchester. F. H. Allen found it at Mt. Chocorua 7 Jun 1900 (Allen 1903) and W. W. Flint found it for the first time at Concord in 1900 (White

1937). The first report for the Jefferson region was 25 May 1902 after which numbers increased until 1910 but then declined again to just a couple of pairs (Wright 1902, 1911).

Dearborn (1903) had only a single report for the area around Durham: a single bird seen at Hampton by the prominent collector S. A. Shaw. By 1909 it had become common in the Dublin area (Thayer 1912). Lord's (1918) earliest arrival date at Hanover was 16 May and general arrival was 20 May in 1912–1917. At Concord, White (1924b, 1937) considered it first a scarce summer resident, its numbers increasing to 1931 after which it disappeared. The detailed summary by Elkins (1957) includes the few available records 1915–1930: Antrim in 1916; Hanover in 1917; Manchester in 1922, 1927, and 1931; Andover in 1922; and Water Village in 1928. Goodhue (1922) had only 1 record for Webster by the time of writing. Though Jefferson was the northernmost point from which it was known by 1930, W. Brewster recorded 1 at Upton, ME, only 1.2 miles from the New Hampshire border on 14 May 1896.

Records published in RNEB 1936–1949 indicate a significant increase in the state population. Earliest spring arrival was 3 May in Hanover in 1940 (R. Ricard) and in 1942 (M. Choukas). R. L. Weaver recorded an exceptional 40 birds near Hanover 29 May 1940, indicating a significant Connecticut River valley population. Northernmost reports were at Whitefield in Jul 1945, Monroe in May 1945 and 1946, Jefferson and Colebrook in 1949, and Pittsburg in 1950. Latest fall report was 1 at Andover 21 Sep 1947 (K.C. Elkins).

In summary, this species was probably not present in New Hampshire in precolonial times and probably first reached southern New England in the 1700s. In the first 2 decades of the 1900s its population grew rapidly. Forest clear-cutting of conifers in northern areas allowed reforestation by northern hardwoods, the Wood Thrush's preferred habitat, and the birds expanded their range into it.

1950 to present. After an increase into the early 1980s, its breeding population in hardwoods and mixed forest has declined (Hunt 2009b).

Spring. Earliest known spring arrivals are at Goffstown 14 Apr 1985 (H.W. Parker), Portsmouth 19 Apr 1985 (R.W. Smart), and Hinsdale 19 Apr 2008 (M. Iliff). Mean first arrival is 29 April and general arrival is about 9 May. Typical spring migrant counts are 1–5; peak counts which may include both migrants and local residents are 20 at New Hampton 17 May 1966 (R.C. and V.H. Hebert) and 25 at Portsmouth 18 May 1971 (E.W. Arnold). Migration is typically over by the last week of May.

Summer and breeding. For 3 decades after 1950, its population increased steadily. Ridgely (1977) cited a great increase in the Squam Lake area since the 1940s but by 2009

it had declined significantly. Allison and Allison (1979) reported it common in the Dublin area. Cohn-Haft (1995) thought it an uncommon probable breeder as far north as the Second College Grant, near the northern limit of its range in the state. New Hampshire BBS route totals 1966–2000 reached a peak of 994 in 1982 after which numbers have declined to 324 in 1984 and to lower numbers since. The *Atlas of Breeding Birds* project 1981–1986 reported at least possible breeding in 92% of priority atlas blocks; the other 8% were in the far north and at elevations above 2000 feet where it is not known to nest. New Hampshire BBS population trend data show an average of about a 4.6% decline in 1966–2009 and 1999–2009, the 1999–2009 regional decline rate even higher (5.9%) and the national rate being 1.8% (Appendix IV).

Fall. Like the other spotted thrushes, this species is quiet and wary on southbound migration. The first suspected migrants are often found in the first week of September; unequivocal migrants at Star Island were singles there 11 Sep 1993 (A. and B. Delorey) and 7 Oct 1973 (D.W. Finch). Peak migration period is the last week of September and the first 2 weeks of October. Late fall reports are 1 at New Hampton 24 Oct 1970 (V.H. Hebert) and at Milford 25 Oct 1975 (A.E. Ames). The latest dates 1950–1989 were at Bristol 16 Nov 1971 (V.S. Wright) and Alton 18 Nov 1978 (W.V. Houle) while in 1990–2009 the latest was at Chester 16 Oct 2006 (A. and B. Delorey); as the number of birds has decreased, the latest dates have been earlier.

Winter. Two December reports: at Plainfield 5 Dec 2001 (P. and S. Stettenheim) and at Newmarket 18 Dec 1993 (B. and S. Hull, M. Davis, CBC).

American Robin *Turdus migratorius*

Status. A very common breeder throughout the state, an abundant spring and fall migrant, and an increasingly common winter resident. Its numbers appear to have increased measurably since 1950.

Early reports to 1950. Listed by Belknap (1792) as the “Robin, *Turdus migratorius*.” Daniel Osborne of Dover kept a diary in which he recorded the first arrival there in spring 1848–1870 (Earle 1963); earliest arrival was 13 March and average arrival was 22 March, typically after southwest winds overnight. Every other writer on bird distribution in New Hampshire from the 1870s to 1950 considered it a common migrant and breeder statewide and occasional in winter, primarily south of the White Mountains. Specific references include 1 at Webster 25 Dec 1880 (C.F. Goodhue), wintering flocks at Lancaster 1885–1886 (Spaulding 1886), a spring migrant in Hanover 4 Apr 1886 (Anonymous 1886), in Swanzey (Read 1892), and “a few winter in Manchester”

(Batchelder and Fogg 1899). White (1937) found it at Concord in the winters of 1925, 1926, and 1929. Allen (1903) reported it above Crawford Notch at 5080 feet elevation 12 Jul 1886.

It adapted far better to and benefited far more from clearings and settlements than most other birds during the deforestation period 1700–1880. It is a diurnal migrant with flocks of males preceding females by a week or two in spring; large flocks are often seen migrating in both spring and fall; occasional flocks are also found in winter. Records published in RNEB 1936–1949 show it to have been a regular migrant into mid- or late November, occasionally as far north as Woodsville, Dixville, Pittsburg, and Monroe. It was reported in winter in small numbers as far north as Hanover and fairly regularly at Manchester. Spring arrivals in the second week of March were routine, and the largest flock noted was 1000 at Hanover 31 Mar 1942 (R.L. Weaver), numbers in the 75–200 range being more typical.

1950 to present. Some increase overall, especially in winter, following a drop in numbers in the 1950s and early 1960s possibly related to DDT poisoning, primarily on its winter territory.

Spring. Very early dates of suspected migrants are 2 at Monroe 25 Feb 1953 (*fide* T. Richards), and “southern New Hampshire” 26 Feb 1957 (*fide* V.H. Hebert), though these certainly could have been wandering birds that wintered. Most first arrivals are reported from the southernmost quarter of the state, primarily in the lower Merrimack River valley. Migrant males peak in the last week in March, females in the first week of April. Earliest known arrival as far north as Pittsburg was 31 Mar 1968 (R.C. Hebert).

General arrival is typically by the first week of April, and in 1950–2009 the highest counts were usually in the second week of April. Counts of 500 or more in 1950–2009 include 6000 at Nashua 5 Apr 1967 (C.O. Barry), 500+ at Canterbury 5 Apr 1967 (N. diGiovanni), 2000 at Litchfield 4 Apr 2008 (C.J. Martin *et al.*), 1050 at Amherst 18 Apr 1967 (R.W. Lawrence), 1000 at Greenland 4 Apr 2008 (T. Bronson), 905 at Bath 9 Apr 1997 (R.J. Bradley), 650 at Lancaster 20 Apr 1972 (R.J. Bradley), 534 at Goffstown 1 Apr 1967 (W. Riehl), and 500 at New Hampton 22 Apr 1972 (V.H. Hebert). Spring migration 1950–2009 may have been a bit earlier than in the 1800s, but there is little data to prove this. It is clear that peak counts reported are much higher than before 1950, suggesting an increase in numbers though it is hard to tell how much more common a species has become when it was very common in the first place.

Summer and breeding. High breeding season counts in Coos County include 151 at Pittsburg in 1958 and 227 at Lake Umbagog in 1959 (both V.H. Hebert *et al.*). Numbers declined there in the 1960s with reports at Errol–

Umbagog down 84%, and statements elsewhere of very few young, a change possibly attributable in part to pesticide poisoning on the wintering range. While DDT produced high mortality in the 1950s, national BBS data showed a strong recovery 1966–1979. New Hampshire BBS data 1966–1993 showed a point to point decline from about 1000 to 800 individuals but with an intermediate spike to 1600 in 1972. The local population had largely recovered by 1980 and the *Atlas of Breeding Birds* project 1981–1986 showed some evidence of breeding in 99% of the priority atlas blocks with breeding confirmed in 96% of them (Foss 1994). New Hampshire BBS population trend data showed virtually no change (0.8%) for both 1966–2009 and 1999–2009 (Appendix IV).

While it is not usually considered a high elevation spruce-fir species, it has been recorded at Lake of the Clouds at 5050 feet in 1955 (T. Richards), on Mt. Washington at 5300 feet in 1965 (T. Richards), and at Thompson and Meserves Purchase at 4800 feet 6 Jun 2003 (R.A. Quinn). Most authors do not consider the routine postbreeding flocking of adults and juveniles part of fall migration though this occurs throughout August and may include some early migrants from farther north. Examples include 150–200 at Bethlehem 4 Aug 1982 (R.J. Bradley), 200 at Rye 22 Aug 1965 (V.H. Hebert), and 100 at Monroe 23 Aug 1989 (P. Powers). Breeding population is listed as stable in hardwood and mixed forest by Hunt (2009b).

Fall. The first true migrants as opposed to lingering birds are suspected by the second week of August, and the migration period is extended into mid-November with a general peak in the middle 2 weeks of October. This migration pattern seems to have been unchanged since 1950 but with a trend toward higher numbers reported and some of those counts in November instead of October, most often concentrated at night roosts. The 10 highest counts 1950–2009 ranged 1000–6500 and included 6500 at New Hampton 18 Oct 1963 (V.H. Hebert), 3000 at Newmarket 24 Nov 2008 (P. Brown), 2400 at Stratham 14 Nov 2007 (S. Young), and 2000 at Amherst 7 Nov 2008 (C. Sheridan).

Winter. Birds linger longer in some winters and numbers reported have increased significantly since 1950. Few were reported past early February in 1950–1980 and numbers were low. Examples include at New Hampton only to 31 Dec 1955 (Mathews), at Monroe to 26 Jan 1958 (R.B. Emery), only 1 report after a 9 Feb 1969 storm (*fide* V.H. Hebert), and a flock of 69 at Rye 1 Feb 1979 (E.W. Phinney). More recent reports include 250 at Stratham 4 Jan 2006 (G.W. Gavutis, Jr.), 30 at Nashua 28 Feb 2006 (R. Andrews), 1125 combined at 3 coastal localities 19 Jan 2008 (T. Bronson, S.R. Mirick *et al.*), 8 at 1900 feet elevation at Lincoln 11 Feb 2007 (J. Stockwell), 300 at Newmarket 12 Jan 2008 (T. Bronson), 286 at Swanzey 24 Feb 2008 (L. Tanino), 350 at Concord 3 Jan

2009 (P.D. Hunt), and an exceptional 5000 at Stratham 23 Jan 2010 (S.R. Mirick).

CBC data provide a good measure of winter distribution. Coastal CBC totals were 10 or less in the 1950s, up to 43 in the 1960s, to 59 in the 1970s, 90 in 1980, and rising to the 1000–2000 range by 2005–2009. The 1971 statewide CBC total was 27 but totals rose sharply from 1990 on: 1990–1994 numbers averaged 271; 1995–1999 averaged 1171; 2000–2004 averaged 1326; and 2005–2009 averaged 6011 with totals of 10,000 in both 2006 and 2008. The increase has occurred primarily south of the White Mountains, but birds have been found occasionally even as far north as Errol and Pittsburg.

Taxonomic note. The local New Hampshire nesting form is nominate *T. m. migratorius*. The Newfoundland (Black-backed) Robin *T. m. nigriceps* breeds in Quebec, Newfoundland, and Labrador, and migrates as far south as the Gulf Coast in winter, routinely passing through New Hampshire in both spring and fall. Spring adult males are readily identifiable by their dark black lower napes and upper backs though females and juveniles are probably indistinguishable. In MA *nigriceps* has been collected from migrating flocks in March, April, and October (Griscom and Snyder 1955). There are no documented New Hampshire records at present; it should be sought in winter and spring.

Varied Thrush *Ixoreus naevius*

Status. Rare but increasingly frequent visitor from the Pacific Northwest.

1950 to present. The first state record was 1 at New Hampton on 18 Jan 1958 (F. Lathrop, V.H. Hebert *et mult.*). There have been reports of 54 additional birds 1959–2010 and a pattern of increase has also been observed elsewhere in the New England. Keith (1968) noted that “[e]astward vagrancy in this species is thought to be triggered by heavy snows in the Rocky Mountains, which drive numbers of birds to lower altitudes and latitudes in search of food;” he (*op. cit.*) summarized 132 extralimital records of this species 1848–1966 which included 11 in New Hampshire by that time. Masterson (2004b) summarized 46 New Hampshire records, pointing out that “[m]ost reports...come from south of the Lakes Region.” Of the 38 towns reporting it, nearly half of the birds were found in the Merrimack River valley, followed by the coastal area and then the Lakes Region; there were 4 reports from the Connecticut River valley ranging from Littleton to Charlestown. The earliest fall arrivals have occurred in October but most birds have been found from December to February at feeders. Many remained near feeders for some time and at least 12 were last seen as late as 20 March to 20 April. While birds were reported in 33 of the 52 years since 1958, 4 were present in 1969–

1970, 3 in 1960, 3 in 1980, and there were 13 years in which 2 were present; some multiple occurrences in New Hampshire coincided with flight years in MA (Veit and Petersen 1993). A photograph of 1 appeared in *New Hampshire Audubon* 20 (6): 3, November–December 1984. Has occurred virtually annually in MA since the 1960s, rarely up to 3–5 per year (Veit and Petersen 1993, BO database 2010), 18 accepted records for VT (C.C. Rimmer pers. comm.), and over 15 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Taxonomic note. Two specimens from MA and all other East Coast specimens have been identified as the nominate form *I. n. naevius* (Veit and Petersen 1993).

FAMILY MIMIDAE

Gray Catbird *Dumetella carolinensis*

Status. A common spring and fall migrant and summer resident at low to middle elevations; occasional in early winter, a few rarely winter.

Early reports to 1950. First reported for the state by Belknap (1792) as “Cat Bird, *Muscicapa carolinensis*,” recorded at Bethlehem (Minot 1876), and listed as common to abundant at Webster (Goodhue 1877a). Dwight collected specimens at Hollis 19 May 1876 and 26 Jul 1886 (AMNH #375462–375463 respectively). In the Lake Umbagog region 1871–1909, W. Brewster thought it a rare and irregular summer resident and found it in New Hampshire only 5 times 1896–1907 (Griscom 1938). Found at Windham (Morrison 1883) and at Concord 3 Dec 1901 (Oliver 1902). Dearborn (1898) considered it common in Belknap and Merrimack Counties and (1903) near Durham where his extreme dates were 7 May to 10 October. Howe (1901–1903) found it common at Bridgewater, and by 1903 it had been recorded at Franconia in August and September (Porter 1903) and at North Conway (Porter and Porter 1904). Blanchard (1907) reported 1 at Wilton 25 Dec 1903.

Allen (1903) thought it common south of the mountains and up to 500–600 feet elevation in the foothills and had reports from Intervale and from Franconia as late as 5 October (B. Torrey). Comey (1904) reported it from Holderness, Marble (1907) found it occasionally at Crawford Notch in September, Thayer (1912) considered it common in the Dublin area from early May to an extreme late date of 13 December, and Wright (1911) called it an uncommon but increasing summer resident in the Jefferson area, once as late as 4 October. Lord’s (1918) early arrival date at Hanover was 7 May and average arrival there was by 11 May in 1912–1917. Reported in West Claremont in mid-October 1918 (Hunter 1920) and at Surry in fall (Kingsbury 1925). At Concord, White

(1924b, 1937) considered it very common as a summer resident and recorded between extreme dates of 2 May 1936 and 10 Oct 1935. Forbush (1929) noted that it was rare and local in the northern part of the state and absent from higher elevations.

Reports were published annually in RNEB 1936–1949, extreme early arrival being 26 Apr 1941 at Wilton (R.N. Lake) and latest in fall being 15 Oct 1937 at Manchester (E.J. Goellner), usual first arrival being in the first week of May and the last seasonal reports in the last week of September or first week of October. Peak count was 25 at Andover 18 Sep 1949 (K.C. Elkins), and an albino was at Danbury 28 Jun 1949 (K.C. Elkins). In summary, this species has been common in the southern part of the state since colonial times but scarce north of the White Mountains.

1950 to present. Continues generally common though the breeding population is considered to be declining (Hunt 2009b) since the 1970s, possibly due to reforestation.

Spring. Earliest known arrivals have been at Deering 18 Apr 1980 (P. Emmerson), Exeter 18 Apr 2008 (R.S. Aaronian), Raymond 26 Apr 1995 (G. Mitchell), Hollis 27 Apr 1993 (R. Andrews), and at White and Seavey Islands 28 Apr 2005 (M. Barney *et al.*). Mean first arrival is 3 May and mean for general arrivals is 7 May. Most first arrivals were found in the Merrimack River valley or at the coast with fewer in the Connecticut River valley and southwest. Records in March are believed to be overwintering birds. Usual high counts are only in the 10 range but peak known count is 100+ at the coast 18 May 1986 (R.A. Quinn). Late migrants are difficult to distinguish from residents except on offshore islands where few breed: 1 at Star Island 8 May 1966 (ASNH field trip) could have been resident, but 50 there 1 Jun 2008 (E.A. Masterson *et al.*) greatly exceeds the local breeding population and suggests a late coastal flight. It may be arriving somewhat earlier since 1990 due to a series of warmer and earlier springs.

Summer and breeding. The *Atlas of Breeding Birds* project 1981–1986 found evidence of breeding in 90% of priority atlas blocks; it was absent from a few heavily forested and higher elevation areas in the north (C.S. Robbins *in* Foss 1994). Cohn-Haft (1995) had only 4 records for the Second College Grant: twice in May–June, once in late August, and once in late September. It has been recorded as high as 2500 feet elevation (Ridgely 1988) but is usually below 1500 feet. New Hampshire BBS totals for 22 routes were 250–350 individuals in 1966–1977, peaking in 1973 but then decreasing to slightly below 200 by 1994. Longer-term New Hampshire BBS population trend data show an average decline of about 1.5% in both 1966–2009 and 1999–2009 (Appendix IV). A late, cold, and rainy spring in 1959 caused most

first nesting attempts to fail in the central part of the state, but many second broods kept overall numbers little changed. Breeds on Star Island.

Fall. Southbound migration is often suspected by mid-to late August and peaks in the first 2 weeks of September: 30 at the coast 17 Aug 1968 (R.W. Smart *et al.*), 23 at Littleton 3 Sep 1962 (R.J. Bradley), and 30 at Littleton 8 Sep 1963 (J.C. McIlwaine). In some years, significant counts have been made at Littleton and Hanover suggesting that the Connecticut River valley is a major flyway. Significant counts have occurred at the coast from late September and early October, possibly migrants from north of the state as well as local breeders: 30 at the coast 26 Sep 1965 (R.W. Smart), 10 at Star Island 24 Sep 2002 (M. Suomala), 10 there 20 Sep 2007 (E.A. Masterson *et al.*), 30 there 26 Sep 2009 (E.A. Masterson), and 3 there 12 Oct 1975 (L.G. Phinney). Fifty Gray Catbirds were banded on Star Island in the fall of 1999 (R.W. Suomala). There are over 15 November reports, possibly birds arriving from the north. Occasionally, late transients arrive several weeks after the last resident has left: “last regular” at New Hampton 4 Oct 1958 but a straggler there 30 Oct 1958 (R.C. and V.H. Hebert), last reports were at Concord 6 Oct 1961 (M.N. Dodge) and 27 Nov to 2 Dec 1961 (K.E. Dymont).

Winter. The majority of reports at this season come from the coastal region with a scattering in the southern interior. It was recorded on CBCs 5 times 1998–2008; in 2005 there were 4 on the coast and 1 on Star Island. In the 1990s several survived into early January, and 1 remained at Kensington until 27 Feb 1996 (G.W. Gavutis, Jr.). Numbers increased 2000–2008: 10 at Rye 23 Jan 2002 (P. Wilson), 1 of which continued at least to 2 Feb 2002 (S.R. Mirick *et al.*), and inland records came from Wolfeboro 10 Feb 2007 (J. Nelson) and Hillsborough 15 Feb 2006 (J. Flanders *et al.*). The northernmost known wintering record is 1 at Berlin in 1953–1954 (ASNH). Birds found in March are thought to have wintered: North Hampton 5 Mar and 25 Mar 2006 (S.R. and J. Mirick), and North Hampton 8 Mar 1989 (M. Hardy). Milder winters have probably increased the survival rate of lingering birds since 1990.

Northern Mockingbird *Mimus polyglottos*

Status. Becoming a fairly common resident, especially in the southeastern counties, and may be expanding its range in other parts of the state, though declining since about 2004.

Early reports to 1950. Essentially invaded from the south in this period. The first report in the state was 1 shot at Hampton 24 Aug 1900 by S. A. Shaw (Allen 1903, Dearborn 1903), followed by 1 collected at Milford in Nov 1904 (Wright 1921b). One was present at Concord for 3

weeks in Jan 1912 (Goodhue 1922), 5 Nov 1916 at Manchester (Varick 1917), 1 wintered at Concord 1918–1919 (Green), 1 at Manchester 9 Jun 1921 and 16 Jun 1922 (both D.F. Hopkins), 1 at Manchester 25 May 1927 (Weaver 1941b), and 1 at Concord from before 3 Jan to at least 26 Feb 1931 (S.J. Woodward). One was at Rochester in the summer of 1931 (M.M. Spiller), 1 at Manchester 25 May 1937 (E.J. Goellner), 1 at Winchester in Jun 1935 (Bagg and Eliot 1937), and at least 1 at East Andover 26 Oct to 4 Nov 1939 (K.C. Elkins). One was at Exeter in Feb 1945 (N.L. Hatch) and records occurred annually 1947–1949, all at the coast except for 1 as far north as Dummer 8 Oct 1949 (T. Richards). The early invaders tended to appear in the May–August and November–February periods along the coastal plain or Merrimack River valley. Many were likely postbreeding strays from farther south that probably did not survive the winters. The species has colonized northward from the southeastern states since 1900, becoming widespread in southeastern MA by 1950.

1950 to present. Has become a generally distributed permanent resident south of the mountains, scarce north of there. Some evidence of a recent decline since 2004, especially in the Merrimack River valley (*fide* R.A. Quinn), and the breeding population is listed as declining (Hunt 2009b).

Spring through summer and breeding. The 1950–1962 period witnessed an increase in reports, especially in late spring. The first confirmed nesting was 7 Jun 1957 at Durham, a nest with 4 eggs (T. Richards), and a pair was present in that area for several following years. Breeding was suspected in 1959 in Seabrook (ASNH) and Plainfield (C.S. Boyd). Possible postbreeding wanderers or pioneer individuals were found at Star Island on 1–10 Jul 1960 (E. Frost), on 24 May 1964 (ASNH field trip), and on 23–31 May 1965 (R.S. Holt *et al.*). Numbers and its range expanded further in 1963–1987. The elevation record for the state was 28 May 1962 at 3400 feet in Wentworth (H.M. Van Deusen). The first report for Jefferson was 21 May 1965 (Richards 2000) and for Dublin was 12 Jun 1972 (Allison and Allison 1979). By 1976 it had become a regular nesting species in Ashland and Center Harbor and probably Center Sandwich, Holderness, and Moultonborough (Ridgely 1988), though it “seems to have become scarcer” in the Sandwich area since 1990 (R.S. Ridgely pers. comm.). The *Atlas of Breeding Birds* project 1981–1986 found it breeding in all but 9 priority atlas blocks in the 5 southeastern counties but of spotty occurrence in the Connecticut and northern Merrimack River valleys; north of the mountains it was found at several scattered locations in the Androscoggin valley above Berlin (C.S. Robbins *in* Foss 1994). Occasionally nests on Star Island (Borrer and Holmes 1990). The New Hampshire BBS reported its first mockingbird in 1967 and

reached a high count of 47 in 1987. New Hampshire BBS population trend data showed an increase of 2.9% per year in 1966–2009 but a decline of 5.2% per year in 1999–2009 (Appendix IV).

Fall and winter. Occasional birds appear in fall where they had not been all summer, suggesting further range expansion. The highest counts of the year have been recorded on CBCs, especially as the species has become adapted to suburban areas with bird feeders and especially near the coast. The first CBC reports were on 30 Dec 1956 at Exeter and 28 Dec 1963 at the coast. The great majority of CBC reports have come from south of Hanover and the Lakes Region. Statewide CBC totals peaked in 1995–2002 with a noticeable decline 2004–2008: statewide totals averaged 250 from 1992–2002 but only 112 from 2003–2009. In the coastal region alone, the 1992–2002 average was 94 falling to 56 in 2003–2009; at Nashua, the 1992–2002 average was 67 dropping to 46 in 2003–2009. The highest single CBC count was 157 at Manchester in 2004. North of the White Mountains, records are few and scattered: at Berlin 26 Nov 1953 (E.P. Cook), at Berlin 18 Jan 1995 (K. Dube), at Berlin 1 Feb 1988 (M. Ellis), and at Pittsburg 29 Dec 1998 (CBC).

Brown Thrasher *Toxostoma rufum*

Status. An uncommon spring and fall migrant and rare to uncommon summer resident in many parts of the state. It has been declining for lack of suitable habitat but has been reported in several winters.

Early reports to 1950. First reported for the state by Belknap (1792) as “Thrasher, *Turdus orpheus?*” It was collected at Hollis by J. Dwight on 3 Jul 1877 and 30 Jun 1876 (AMNH #375671–375672 respectively). Arrival dates for this species at Hollis 1874–1876 were reported as 7–9 May (Fox 1876). Goodhue (1877a) considered it a common summer resident at Webster, Stearns (1887) thought it common in the southern part of the state, and it was present in Swanzey (Read 1892). At Lake Umbagog, W. Brewster found it very rare, having only 1 record in New Hampshire 16–20 May 1897. Dearborn (1898) thought it common in summer in Belknap and Merrimack Counties, in the Durham region (1903), and at Northfield (1905). Howe (1901–1903) thought it common at low elevations near Bridgewater. Allen (1903) believed it common in the southeastern part of the state but uncommon elsewhere, following the river bottoms up into the White Mountain valleys as far north as West Ossipee, Tamworth, and even Intervale. Marble (1907) had only 1 report in Crawford Notch in Jul 1905. At Dublin, Thayer (1912) considered it fairly common from early May into October. In the Jefferson region Wright (1911) considered it a rare spring and summer visitor and had only 3 records: 31 May 1905, 13 May 1907, and 20 Jun 1910. At Hanover, Lord’s (1918) earliest spring arrival

was 3 May and average arrival was by 15 May in 1912–1917. At Concord, White (1924b, 1937) thought it fairly common as a transient and breeder between extreme dates of 23 Apr 1937 and 1 Oct 1934.

Records were published annually in RNEB 1936–1949 between extreme dates of 18 Apr 1942 at Hanover (F. West) and surprisingly far north at Errol 14 Oct 1947 (T. Richards). Most records were from south of the White Mountains, an exception being 1 far north at Colebrook 12 May 1948 (D.W. Brainard). Usual spring arrival was in the last week of April or the first week of May and departure in fall was by late September or the first week of October.

1950 to present. A shrub habitat specialist, its breeding population is listed as declining by Hunt (2009b).

Spring. Earliest known arrivals are at Newmarket 5 Apr 2006 (P. Hendrik), at Bow 10 Apr 1977 (H.B. Miller, A.E. Lajoie), and at Rye 13 Apr 1963 (J.E. Cavanagh). Mean first arrival date is 20 April, and general arrival and peak counts occur 5–15 May. High counts include 10 at New Hampton 7 May 1960 (R.C. and V.H. Hebert), 10 at Lee 8 May 1965 (O. Earle *et al.*), and 10 at Pittsburg 15 May 1965 (F.T. Scott). First arrivals often appear in the Merrimack River valley with fewer in the Connecticut River valley and at the coast. Though much less common north of the mountains, notable reports from there are at Whitefield 28 Apr 2006 (M. and R.W. Suomala), Dummer 7 May 1972 (V.H. Hebert), and Berlin 8 May 1970 (D.W. Brainard). The elevation record for the state is 1 at 3900 feet in Tuckerman’s Ravine, Mt Washington, 10 May 1972 (T. Richards).

Summer and breeding. It began to be reported farther north and at higher elevations in 1950–1970. Notable reports were at Dummer 1 Jul 1959 (R.C. Hebert), at Lancaster in 1960 (R.C. and V.H. Hebert), at Whitefield 26 Jul 1963 (ASNH), 4 pairs with young at Monroe in 1963 (ASNH), and at Crawford Notch in 1966 (T. Richards). Totals for 22 New Hampshire BBS routes showed declines from at least 80 in 1969 to fewer than 5 in 1988. A widespread but uncommon breeder in the Squam Lake region (Ridgely 1977), and a fairly common summer resident near Dublin (Allison and Allison 1979). The *Atlas of Breeding Birds* project 1981–1986 reported breeding evidence in 63% of priority atlas blocks statewide, but their distribution was heavily concentrated south of the White Mountains and only occasionally in river valley lowlands north of there (C.S. Robbins *in* Foss 1994). For comparison, Laughlin and Kibbe (1985) and Renfrew (*in prep.*) reported several breeding sites in VT in the Connecticut River valley as far north as the latitudes of Colebrook and Woodsville, New Hampshire. New Hampshire BBS population trend data give an average of a 8.9% annual decline in the 1966–2009 and 1999–2009 periods in comparison to a 3.2% annual decline regionally and a 0.6%

decline nationally (Appendix IV). This species appears to be surviving at lower elevations in suitable habitats but declining where its preferred fields and brushy edges are being replaced by forest.

Fall. Migratory movement is often suspected by late August and peak migration is the last 2 weeks of September. There have been 5 reports of migrants at Star Island between 18 Sept 1994 (P.D. Hunt) and 23 Oct 1999 (R.W. Smart). Most birds have gone from northern localities by the end of September and from elsewhere by late October.

Winter. Little change in winter status 1950–2009. In 1954–2009 it was reported at least 34 times in December or later and into February at least 14 times. Inland reports include 1 that remained through the winter at Bethlehem to 26 Mar 1967 (E.M. McLean); it is also reported to have wintered in Sandwich and Durham in 1966 (ASNH). Most winter birds have survived at feeders.

Curve-billed Thrasher *Toxostoma curvirostre*

Status. Vagrant from the southwest. Hypothetical. One report. Such an exceptional report requires a specimen or identifiable photograph to be considered other than hypothetical. A bird identified by the observers as this species appeared in Barrington, Rockingham County, on 29–30 Oct 1964 and was observed as close as 10 feet for over an hour the first day by Helen and Raymond Spinney, Mrs. John Hescock, Mrs. Fillmore Sage, Mrs. Herman Thompson, Mrs. Robert Carpenter, and Mrs. George Smith, all members of the Rochester Bird Club. A written description in great detail was sent to Ruth Emery at MA Audubon Society. This description is sufficiently detailed to indicate that the bird was probably of the nominate race *T. c. curvirostre*, the easternmost-distributed of the 2 described races of this species. Individuals of this species have occurred as vagrants to California (1), Florida (1), Louisiana (1), Illinois (1), Nebraska (4), Wisconsin (2), Arkansas (3), Minnesota (3), Kansas (3), Idaho (1), Nevada (1), Alberta (1), and Manitoba (2) (Pyle 1997), indicating a well-established pattern of vagrancy. This is the only known report for New England. Not accepted by the NHRBC.

FAMILY STURNIDAE

European Starling *Sturnus vulgaris*

Status. This introduced species is an abundant migrant and winter resident and a very common and widespread breeder.

Early reports to 1950. Unsuccessful introductions were made between 1872 and 1889 in Quebec, MA, New Jer-

sey, Oregon, and Pennsylvania before one succeeded in New York City 1890–1891 (Forbush 1927). From that time it spread very rapidly into the northeast, and the first known New Hampshire report is of 20–30 birds feeding on apples at Hinsdale in Dec 1911 (Metcalf 1912). The next records are of 4 at Hanover 17 Apr 1915 (Bill 1915a, 1915b), the first record at Goffstown in 1918 (Blaisdell 1919), and 116 wintering at Nashua 1918–1919. It became fairly common near the coast (Scott 1921), and Goodhue (1922) reported it had reached Penacook by 1916. At Concord, White (1924b) reported there were only a few but wrote later (1937) that it had spread widely. Near Westmoreland, Shelley (1927) said the number of wintering birds had increased but that the number of nesting pairs had dropped slightly. G. L. Perry found it as far north as Lake Umbagog by 1930–1933 (Griscom 1938).

Surprisingly few reports were submitted to RNEB 1936–1949, all but 1 from the Connecticut River valley. Earliest arrival at Whitefield was 9 Mar 1942 (D.J. Lennox), at Ossipee was 19 Mar 1945 (E.E. Pratt), and peak spring migration was reported at Hanover as the first week of Apr in 1940 (R.L. Weaver). Two hundred fifty were wintering at Hanover by Jan 1943 (L. Forsyth) and 220 wintered at Monroe in Jan 1949 (R.B. Emery).

In summary, this species colonized the area south of the White Mountains within 15–20 years of its first known appearance, extended its range well up the Connecticut River valley, and had reached northern Coos County at least by 1933. Though it reached its maximum numbers in MA in 1928–1933 (Griscom and Snyder 1955), since that time it has been declining there; its peak population in New Hampshire was not reached until after 1950.

1950 to present. Breeding and wintering numbers expanded rapidly 1960–1975, and its breeding area spread northward, effectively to the Canadian border. Evidence



of a modest decline since 1985, and its breeding population is listed as declining by Hunt (2009b).

Spring. Some migratory movement is often suspected by the last 2 weeks of February as flocks at wintering localities begin to increase. Thirty-five at New Hampton 26 Feb 1971 was up from none only 4 days earlier (V.H. Hebert). One hundred had already reached Errol by 28 Feb 1971 (V.H. Hebert). Migration is in full swing by the first week of March: 40 migrating at New Hampton 3 Mar 1966 (R.W. Smart), and the first birds of the year arrived at Pittsburg 4 Mar 1958 (F.T. Scott). Peak counts usually are in late March: 2000 at Charlestown 18 Mar 1973 (W.K. Kidder), 7280 at Manchester 28 Mar 1967 (W. Riehl), and 8000 at the coast 3 Apr 1966 (E.W. and L.G. Phinney). Reported numbers of migrants decline by late April: 500 at Center Harbor 15 Apr 1966 (J.P. Merrill), 100 birds at Green's Grant 20 Apr 1968 (D. Bri), and 7 at Charlestown 30 Apr 1975 (W.K. Kidder). Cohn-Haft (1995) only had records in Apr 1983 and May 1984 at the Second College Grant.

Summer and breeding. Reports in NHBN and NHAQ 1950–1966 indicated a continuing increase in breeding numbers; after 1966 data was reported through BBS reports. The high point in the New Hampshire BBS proved to be 1968 with about 1400 individuals reported, following which numbers began to decline. The fourth lowest count was in 1982, the second lowest in 1984, the 1991 total was 610 and the 1992 total was only 462, though a modest increase occurred thereafter. New Hampshire BBS population trend data average about a 3.7% per year decline in both 1966–2009 and 1999–2009, in line with the regional decline of 3.1% per year (Appendix IV). It had become scarce and local in most of the Squam region by the 2000s (R.S. Ridgely pers. comm.). New Hampshire's pattern contrasts sharply with the major nationwide increase that occurred at the same time. The *Atlas of Breeding Birds* 1981–1986 found at least possible nesting in 82% of priority atlas blocks (R. Andrews *in* Foss 1994); breeding was lacking in heavily-wooded and high-elevation blocks in the mountains and in much of Coos County.

Fall. Postbreeding flocking (especially at nighttime roosts) in advance of migration is usual in August, occasionally earlier: 1000 at a roost in Whitefield and Littleton “before the end of July 1980” (R.J. Bradley), 2000 at Manchester 3 Aug 1966 (R.W. Lawrence), 1000 at Charlestown 13 Aug 1974 (G.L. Kidder), and 300 at Moultonboro 14 Aug 1959 (I.A. Behr). Birds typically withdraw from the northern parts of their range by the first 2 weeks of September: 150 at Littleton 4 Sep 1958 (R.J. Bradley); 83 migrating at New Hampton 5 Sep 1987 (V.H. Hebert), 300 at Charlestown 6 Sep 1960 (W.W. Kidder), 4000 at Littleton 10 Sept 1992 (R.J. Bradley), and a northern high count of 1500 at Whitefield 15 Sep 1994 (P.D. Hunt). Peak fall counts typically occur in the south-

ern part of the state from the end of September into November as smaller migrant flocks accumulate: 5000 at Greenland 25 Sep 1968 (R.M. Gamester); 25,000 estimated at Hampton 25 Oct 1970 (R.W. Lawrence *et al.*); 8000 at Portsmouth 8 Nov 2000 (S.R. Mirick); and 5000 at the coast 12 Nov 1962 (H. Davis).

Winter. As shown by CBC reports, this species has been successfully wintering farther north since 1950. The first significant winter reports were from New Hampton and Moultonboro in 1955 and in Franconia and Laconia in 1959. There were none in Errol or Pittsburg in 1960, but 2 were in Pittsburg in 1967 and 2 wintered in Errol in 1969–1970. The 1975 CBC included 4 in each of Errol and Pittsburg. In 1991 there was a high of 82 in Pittsburg, with 15 in Errol in 1998 and 1999. About half the statewide CBC total has been found on the coast in many years. Selected statewide totals are 9409 in 1971; 18,175 in 1991; the high of 32,040 in 2000; 23,279 in 2001, down to 12,503 in 2008 and 9276 in 2009. Selected totals from the Coastal CBC alone are 548 in 1955; 7013 in 1965; the high of 23,446 in 1978; followed by declines to 19,351 in 2001, 4185 in 2002, and 3562 in 2009. A certain amount of population fluctuation is attributable to winter storms, variable amounts of effort in counting birds at winter roosts, and the decline of farmland habitat. Many birds retreat from rural areas into urban centers in winter. Ridgely (1988) considered it only an occasional wintering species in the Squam Region.

FAMILY MOTACILLIDAE

American Pipit *Anthus rubescens*

Status. A fairly common spring and common fall migrant. Since 1991 it is a rare local breeder above timberline on Mt. Washington; rare in winter, primarily along the coast. A species of Special Concern in New Hampshire.

Early reports to 1950. Goodhue (1877a) had but a single spring report at Webster on 10 May 1875 but did not mention any fall records. At Lake Umbagog, W. Brewster never arrived there early enough in spring to find migrants at that season, but in fall he found it common and especially abundant in 1883, 1887, and 1888, his extreme dates being 7 Sep 1888 to 25 Oct 1888. In Belknap and Merrimack Counties, Dearborn (1898) thought it uncommon in spring around 1 May and regular in early October; for the coastal region he (1903) did not mention spring records but thought it an abundant migrant from an average arrival date of 15 September into early October. Allen (1903) called it an uncommon spring migrant, rare inland but regular at the coast, but “more numerous” in the fall, both at the coast and in White Moun-

tain valleys “after the 15th of September.” Other fall reports for the White Mountains include 18 Sept 1903 (Porter 1903) and at least 11 fall dates 15 Sep 1908 to 22 Sep 1917 (Rogers 1902–1919).

Wright (1911) made no mention of spring records in the Jefferson area, but it was common there in fall, his earliest observation being 8 Sep 1908 with peak counts of flocks totaling 80, 100, and 150+ birds 20 September to 5 October. Wright (1911) also refers to migrant flocks above treeline on Mts. Jefferson, Clay, Adams, and Madison in the middle 2 weeks of September. Lord (1918) only had a record for the Hanover area in fall, though L. O. Shelley reported 3 at Westmoreland 14 Apr 1930 (Bagg and Eliot 1937). At Concord, White (1924b, 1937) made no mention of spring records but thought it a common fall migrant between extreme dates of 22 Sep 1935 and 3 Nov 1935. Two were seen on Mt. Madison on the unusual summer date of 20 Jul 1937 (Palmer and Taber 1946), the first hint at possible breeding in the White Mountains. In ME, Palmer (1949) considered it uncommon inland in spring but thought it had “become decidedly more common in spring since 1900,” and noted that fall coastal flocks in the 500–1000 range had been observed.

Of 23 reports published by RNEB 1936–1949, only 5 were in spring; all were in the first 2 weeks of May. The other 18 records fell between extreme dates of 26 Aug 1938 at Albany (A. Lincoln) and 19 Nov 1936 at Hampton Beach (J. Provost), the majority occurring in the last 2 weeks of September to mid-October. High count was 75 at New Hampton 24 Sep 1945 (V.H. Hebert).

1950 to present. Reported much more often in spring than formerly, especially inland, fall numbers reported have risen since 1990, and winter reports have increased sharply both inland and at the coast. Population trend listed as stable by Hunt (2012).

Spring. Earliest migrant known was 1 at Hampton 9 Mar 2001 (*fide* R.W. Suomala) unless this was a wintering bird also found there 13 and 28 Jan and 3 Feb (v.o.). Otherwise the earliest reports are 1 at Laconia 20 Mar 1971 (R.W. Smart), 1 at Rye 21 Mar 1976 (G.C. Robbins, A.C. Borrer), and 1 at Concord 25 Mar 2005 (R.A. Quinn). Usual first arrival is by the first week of April, typically at the coast, more rarely in 1 of the major interior river valleys. Late migrant dates are at Keene 24 May 2004 (J.P. Smith), 2 at Seabrook 25 May 1969 (R.W. Lawrence), Hopkinton 26 May 1972 (H.W. Parker), and White and Seavey Islands 5 Jun 2001 (D. Hayward). Typical spring counts are 10 or fewer, higher counts of 35–50 birds usually occurring 11–19 May; highest counts are 45 at Sandwich 11 May 2008 (A.J. Vazzano), 75 at Haverhill 12 May 1996 (R.W. and M. Suomala), and 80 at North Haverhill 19 May 1985 (R.J. Bradley).

Summer and breeding. Summer records in the mountains began to accumulate following the first midsummer

observation on Mt. Madison in 1937 (see above): 2 on Mt. Washington 19 Jun 1965 (H.C. McDade) and 11 birds at Sargent’s Purchase 16 Jul 1988 (C.J. Martin *et al.*). The first nest was found above timberline with 5 eggs at 5400 feet elevation on Mt. Washington 29 Jun 1991 (C.C. Rimmer *in* Foss 1994; photo in Petersen 1991). In 1998 a concerted effort was made to survey the breeding population on Mt. Washington as reported by Martin (1998): that year 9 nests were found, 43 eggs were laid, 35 eggs hatched, at least 27 chicks fledged, and 30 birds were banded. No nests were found on any other peaks in the White Mountains. The only surveys of breeding pipits on Mt. Washington known to us were done by J. Woodcock in 2009 and 2010; in 2009 he banded 2 males and found 1 nest containing 4 nestlings; in 2010 he color-banded 12 adults, observed a total of 6 females and 13 males between 5295 and 6075 feet elevation and found 5 nests between 5640 and 5910 feet elevation, mostly in Bigelow’s Sedge meadows. Other summer reports include 4 at Thompson and Meserves Purchase 4 Jun 2003 (R.A. Quinn *et al.*) and 38 at Sargent’s Purchase 10 Jul 2008 (C.J. Martin *et al.*). It is suspected that the species has nested on Mt. Washington regularly since 1991, its southernmost known nesting locality in eastern North America.

Fall. The earliest arrivals of migrants are at Hampton 28 Jul 1964 (H. Weber), Mt. Hight 1 Aug 1994 (R. Moore), and Exeter 22 Aug 1989 (S.R. Mirick). Comparing 1950–1970 with 1971–2008, both periods had a mean first migrant date of 14 September with a range to 30 September. However, the mean last report 1950–1970 was 30 October with 42% of records in November, whereas in 1971–2009 the mean last date was 11 November with 83% of reports in November. Five were near the summit of Mt. Moosilauke near 4800 feet 11 Oct 2011 (M. and B. Lipson; photo). Notable late records include 15 at Rye 27 Nov 1977 (ASNH field trip), 1 at Bridgewater 6 Dec 1959 (R.C. and V.H. Hebert), and 3 at Rye 12 Dec 1976 (ASNH field trip); none were reported at these localities later so they are assumed to have been migrants. The 5 latest fall dates in 2003–2008 occurred at the coast.

High inland fall counts have been from late September to mid-October: 600 at Walpole 13 Oct 2007 (E.A. Masterson), 300 at Westmoreland 13 Oct 2007 (C. Seifert *et al.*), 250+ on Mt. Washington 20 Sept 1964 (H.C. McDade), 100 at Keene 29 Sep 1964 (T. Richards), 140 at Canterbury 24 Sept 1998 (R.A. Quinn), a total of 375 at 2 sites in Conway 26 Sep 2009 (B. Crowley, A.J. Vazzano *et al.*), a late record of 100 at Monroe 14 Oct 1954 (R.B. Emery), and a very late inland count of 17 at Westmoreland 2 Dec 2007 (E.A. Masterson). Coastal high counts occur primarily in October and include 225 at Durham 7 Oct 2007 (S.R. and J. Mirick), 150 at the coast 10 Oct 1965 (R.W. Smart), 140 at Durham 16 Oct 1997 (M. Suomala), and 103 there 1 Nov 2008 (T. Bronson *et al.*). This

suggests that the largest migrant numbers tend to be in the Connecticut River valley and in the Mt. Washington area.

Winter. The first known winter reports were 1 at Bridgewater 6 Dec 1959 (V.H. and R.C. Hebert) and 1 at Lee on the Lee/Durham CBC in Dec 1985 (C.A. Federer *et al.*). The next occurred in 1997–1998: 2 at Greenland 26 Dec 1997 (A. and B. Delorey) and 2 at Rye 20 Jan 1998 (C.A. Federer). In the winter of 2000–2001 there were 3 reports from the coast from 13 Jan through 22 Feb. In 2001–2002 there were 4 reports totaling 7 birds at the coast and at Rochester from 1 Jan to 15 Feb. In 2005–2008 7 coastal reports ranged from 2 Dec 2006 at Rye (S.R. and J. Mirick) to 2 at Hampton 27 Jan 2007 (T. Bronson *et al.*). Winter inland reports 2005–2008 included 57 at Walpole 16 Dec 2006 (CBC), 6 there 17 Feb 2007 (D. Clark), 1 each at Westmoreland and Hinsdale 4 Feb 2007 (E.A. Masterson), and 17 at Westmoreland 2 Dec 2007 (E.A. Masterson).

FAMILY BOMBYCILLIDAE

Bohemian Waxwing *Bombycilla garrulus*

Status. An irruptive and erratic winter visitor from the north and northwest that has occurred much more frequently in the last 40 years. Often found at Apple, mountain-ash, and other fruiting trees.

Early records to 1950. The earliest known state records are from Weare in 1860–1870 (Little 1888), at Nashua in early 1880 and at Hampton Falls 17 and 21 Feb 1897 (Allen 1903), at Manchester in winter of 1897–1898 (Batchelder and Fogg 1899), a “flock of 12” at Webster in mid-Feb 1902 (Goodhue 1922), a “notable incursion” in the Jefferson region in the winter of 1908–1909 (Wright 1921), 3 at Durham 10 May 1909 and 1 on 2 Jun 1913 (Scott 1921), 4 near there in late fall of 1914 (Scott 1921), an “invasion” in 1918–1919 as stated in a letter from E. H. Forbush to F.B. White (Keith 1975b), 1 at Hanover 16 Jan 1919 (Scott 1921), 2 at Holderness 2–3 Jan 1932 (Nichols 1932), a flock of 30 at Sullivan 24 Feb 1940 (G.B. Lay), and at Berlin 28 Feb to 10 Mar 1944 (E.P. Cook). Corroborating many of these dates, Palmer (1949) also reported flights in ME in 1868, 1870, 1896–1897, 1908–1909, 1918–1919, and 1931–1932.

1950 to present. Reported nearly every year 1959–2009; a definite increase since 1955. The New Hampshire Audubon Annual Backyard Winter Bird Survey has shown there to be semiannual peaks in most even-numbered years since 1994. Major incursions tend to begin by early October but can start as late as near the end of December. A few reports in most non-incursion years.

Irruptions. Six major irruptions since 1950 into New England, all of which were reflected in New Hampshire, often when the mountain-ash berry crop failed in Canada. Dates and highlights:

4 Dec 1961 to 18 Mar 1962: 50 New Hampton 7 Mar 1962 (R.C. and V.H. Hebert *et al.*).

18 Nov 1968 to 12 Mar 1969: at the time, the largest flight to reach New England in recorded history, a “widespread invasion reaching every part of [New Hampshire]” (Finch 1969); 100 at Manchester 21 Jan 1969 (*fide* H.C. Anderson).

14 Nov 1975 to 28 Mar 1976: “[A]nother incredible year, flocks with large numbers from around the state” (V.H. Hebert in NHAQ); 170+ at Sanbornton 14 Mar 1976 (E.W. Phinney *et al.*).

1 Dec 1993 to 20 Feb 1994: “More than 4,000 birds reported in a three month period” (NHBR); 911 at Laconia 1 Jan 1994 (CBC).

7 Nov 2003 to 29 Apr 2004: 50 records for a total of over 6000 birds reported; 1 flock in Hanover 14 Feb 2004 (B. Shepard) estimated at 1600 individuals; 264 at Durham 8 Apr 2004 (R.W. Suomala) and 200 at Keene 2 Apr 2004 (J. Smith, S. Lerman).

6 Oct 2007 to 27 Apr 2008: 900 at Loudon 1 Jan 2008 (G.C. and A.E. Robbins); 1337 statewide CBC total.

20 Dec 2008 to 6 Apr 2009: a statewide total of 2390 reported from 29 separate locations, mainly in the Lakes Region and farther north and after the CBC period.

Fall. Since 1990, the first arrivals have occasionally appeared by the end of October: examples include Effingham 6 Oct 2007 (A.E. and B. Robbins), 4 at Franconia 8 Oct 2001 (J.C. McIlwaine), and at Sandwich 30 Oct 1999 (A.J. Vazzano). In irruption years, counts over 100 have occurred by November: 240 at Holderness 30 Nov 2007 (J. Williams) and 207 at Plymouth 18 Nov 1993 (P.D. Hunt).

Winter. Statewide CBC totals have ranged widely from only 4 to 1337; examples include 612 in 2005, 652 in 1995, and 1337 in 2007. High individual locality counts have been 360 at Littleton 1 Jan 1998 (R.J. Bradley), 330 at Plymouth 9 Jan 2000 (J. Williams), 900 at Loudon 1 Jan 2008 (G.C. and A.E. Robbins), and 400 at Hanover 13 Feb 2004 (S.R. Sturup) which increased to 1600 there by the next day (B. Shepard).

Spring. In most years only a few are present into March, occasionally in flocks up to 50. High March counts include 500 at Concord 26 Mar 2008 (R.A. Quinn), 475 at Northfield 21 Mar 2007 (P.D. Hunt), and 315 at Enfield 5 Mar 2000 (P.D. Hunt). Unusual southeastern records have been 4 at Star Island in Dec 1995 (CBC) and 100 at Exeter 1 Apr 2008 (L. Medlock). Latest known dates are all since 2000: 30 at Andover 26 Apr 2000 (P.D. Hunt), 1

at Concord 27 Apr 2008 (P.D. Hunt), and 40 at Sandwich 29 Apr 2004 (A.J. Vazzano).

Cedar Waxwing *Bombycilla cedrorum*

Status. An erratic species in all seasons, it is a common migrant and late breeder; in winter it is found where food is available.

Early reports to 1950. The earliest known state report is that of Belknap (1792), the “Cherry Bird, *Ampelis garrulus*,” which surely belongs here despite his use of the specific epithet for Bohemian Waxwing. It clearly was a common species in virtually all of the state 1870–1920. W. Brewster found it common to occasionally abundant at Lake Umbagog 1871–1909, usually scarce there after mid-September but once to 12 Oct 1889. J. Dwight collected specimens at Hollis 6 Jun 1876, 29 Aug 1876, and 26 Aug 1885 (AMNH #378249–378251 inclusive), and Goodhue (1877a) reported it common in summer but included no winter records. Spring migrants were reported in Hanover 4 Apr 1886 (Anonymous 1886), and Nutter (1892) reported nesting near Milan in Jul 1877. Listed as a common summer resident in Belknap and Merrimack Counties (Dearborn 1898), the Bridgewater area (Howe 1901–1903), the Durham area (Dearborn 1903), Crawford Notch (Marble 1907), Dublin (Thayer 1912), and the Jefferson region (Wright 1911).

Goodhue (1885) reported the first winter record at Webster in Jan 1878 and Dearborn (1900, 1903) reported winter records at Durham 10 Feb to 1 Mar 1900, other earlier writers only having records into early October. Allen (1903) was the first to suggest that this species has a split spring migration with movement of flocks in January to March and a second northward movement in May. At Hanover, Lord’s (1918) earliest arrival date was 16 March and average was 19 April in 1912–1919. At Concord, White (1924b, 1937) considered it a common summer resident and breeder but erratic in winter, having only single reports in December and March. Typical breeding season is late from June to September; latest reported is at Westmoreland on 13 September (Shelley 1934e).

It was reported annually to RNEB 1936–1949 from virtually every month of the year. The only winter reports were 8 at Woodsville 19 Feb 1940 (C.E. Smith), 4–15 Mar 1941 at Hanover (W.E. Lanyon), and 8 at Exeter 14 Mar 1949 (N.L. Hatch). Other records were widely scattered both as to time of year and location, the only flocks being 70 at Hanover in Nov 1940 (R.L. Weaver *et al.*) and 100 at Andover 14 Sep 1948 (K.C. Elkins).

1950 to present. Great variation in numbers and periods of migration has continued. Wintering numbers have increased significantly since 1950. A shrub habitat specialist as a breeder and a frugivore in winter, its population trend is listed as uncertain by Hunt (2012).

Spring. What may be wandering winter flocks in the 10–120 range tend to get reported in early March to early April; high known counts in the period are 300 at Canterbury 21 Mar 1993 (R.A. Quinn), 250 at Enfield 7 Mar 1993 (P.D. Hunt), and 200 at Greenland 7 Apr 1962 (K.C. Elkins). Peak northward migration period is mid-May to early June and high counts include 150 at Hill 31 May 1978 (J.H. Ward), 110 at Barrington 2 Jun 2008 (S. Young), and the highest being 960 seen migrating north at Rye 26 May 2010 (S.R. Mirick) and 398 there 30 May 2010 (S.R. and J. Mirick).

Summer and breeding. Flocks of various sizes can appear at almost any time and anywhere: 21 at Brentwood 29 Jul 2006 (T. Bronson); 25 at Rochester 28 Jul 2007 (D. Hubbard); 6 at White and Seavey Islands 20 Jul 2001 (D. Hayward *et al.*); 8+ at 4000 feet elevation on Mt. Washington 15 Jul 1995 (R. Frechette *et al.*), the elevation record for the state; and 250 at Lake Umbagog in Jul 1962 (ASNH field trip). The *Atlas of Breeding Birds* project 1981–1986 documented possible to confirmed breeding in 99% of priority atlas blocks with confirmed evidence in 64% (H.P. Nevers *in* Foss 1994). Regional BBS data show that it has been increasing throughout the northeast since 1966, and New Hampshire BBS counts were the highest in New England, ranging from about 100 individuals in 1966 to plateau at 300–375 in 1980–1994. Longer-term New Hampshire BBS have shown virtually no population trend change in both 1966–2009 and 1999–2009 (Appendix IV). Allison and Allison (1979) and Cohn-Haft (1995) both report it as a common summer resident at Dublin and at the Second College Grant respectively.

Fall. Migration at this season is loosely defined, some postbreeding dispersal being noted by August: 6 at Star Island 7 Aug 1977 (J. Stillman) and 375 at Holderness 30 Aug 1998 (J. Williams). Other migrant reports include at Star Island 14 Sep 1978 (R.S. Holt), 50 at New Hampton 13 Sep 1980 (V.H. Hebert), 75 there 20 Sep 1976 (R.C. Hebert), 100 at Charlestown 16 Oct 1962 (W.W. and G.L. Kidder), and 200 at Hanover 30 Oct 1962 (H. Weber). Extreme high late fall counts are a remarkable 7000 at Plymouth 30 Nov 2008 (B. Griffith) and 800 at Concord 30 Nov 2008 (P.D. Hunt).

Winter. The remarkable variability of winter numbers is well illustrated by CBC reports: statewide reports 1990–2009 ranged from 156 to 5219 with an average of 1078; low counts were 156 in 1996 and high counts were 5219 in 1997 and 4970 in 2007. The abundance of fruit appears to be a factor in the number present. High counts other than on CBCs usually occurred in the southern half of the state: 800 at Concord 24 Jan 2008 (M. Suomala), 700 at Dover 21 Jan 2002 (S.R. Mirick), 500 at Dover 1 Feb 1990 (P. Keenan), and 350 at Hanover 15 Dec 1997 (D. Crook). High counts from the northern half of the state

are 375 at Dixville 29 Jan 1995 (D.B. and T. Donsker) and 300 at Lincoln 16 Dec 1998 (R.J. Bradley).

FAMILY CALCARIIDAE

Lapland Longspur *Calcarius lapponicus*

Status. Regular fall migrant, a scarce winter resident, and a spring migrant in small numbers primarily along the coast.

Early reports to 1950. The first state record was 1 or more noted by Little (1888) at Weare in the Merrimack River valley in approximately 1860–1870. The first specific date was 30 Nov 1899, when 3 were seen at Hampton by Dearborn (1903) as also reported by Allen (1903). Goodhue (1922) said he never found it in central New Hampshire. The only report in RNEB for the entire 1936–1950 period was a flock of 25 found at Hampton 19 Oct 1950 which built up to 75 on 3 Nov 1950 and to 150 by 31 Dec 1950 (T. Richards). This species was either surprisingly scarce or probably overlooked most of the time from 1875 to 1950.

1950 to present. Seasonal visitor virtually every year since 1950 in variable numbers.

Fall. In the coastal region, earliest known arrival is 1 at Rye 10 Sep 1967 (K.C. Elkins, T. Richards *et al.*), second earliest is 1 at Star Island 18 Sep 2000 (R.W. Suomala, D. Hayward), but usual arrival is often not until mid- to late October or even early November. Usual flocks are small (1–10 birds) but occasionally larger as 75 at the coast 26 Oct 1963 (*fide* V.H. Hebert). Extreme dates for migrants at Star Island other than the 2000 report are 25 Oct 1970 (D.W. Finch) to 17 Nov 1968 (ASNH field trip). Occasionally small numbers linger into December as 17 on the coastal CBC 28 Dec 1963 and 15 also on the Coastal CBC 21 Dec 1969 (both *fide* A.C. Borrer). In most years, all have passed through the state by late November.

Inland in the Merrimack River valley, earliest known arrival is 1 at New Hampton 9 Sep 1968 (R.W. Smart), the only other fall reports being a handful in October and early November: 11 at Concord 14 Nov 1998 (R.A. Quinn) and 3 there 18 Nov 2006 (P. Brown *et al.*). In the Connecticut River valley it occurs in fall slightly more often than in the Merrimack River valley; earliest arrival is 1 at Pittsburg 1 Oct 1963 (V.H. Hebert *et al.*); most other records are in mid- to late October. The state elevation record is 2 near the 4800-foot summit of Mt. Moosilauke near Franconia Notch in the White Mountains on 11 Oct 2011 (M. and B. Lipson; photo). Rarely lingers into early winter: 2 on the Third Connecticut Lake CBC 15 Dec 2009 (L. Medlock *et al.*; photo) and 1 on the Littleton CBC 26 Dec 1971 (R.J. Bradley).

Winter. A scarce winter resident, far more frequently found at the coast than inland. Peak numbers in winter in the Rye–Hampton area in January and February have reached 75–100 very rarely, though not since the early 1960s, and are usually are in the 1–5 range. In some years, there are indications of northward movement in late February which may account for slightly higher counts at the coast at that time and for a scattering of inland records, particularly in the Connecticut River valley: 15 at Westmoreland 4 Feb 2007 (E.A. Masterson).

Spring. Both at the coast and inland, most birds have left by early April. Latest reports are 1 at Hampton 7 May 1961 (K.C. Elkins *et al.*), at Salisbury 11 May 1988 (B. Cronin), and 1 at Concord very late on 13 May 1996 (M. Suomala).

Chestnut-collared Longspur *Calcarius ornatus*

Status. Vagrant from the west. One at Deering 29 Nov 1992 (I.C. and S. MacLeod, D.L. De Luca, S. Walker; photo). Six records for MA (Veit and Petersen 1993, BO database 2010) and 1 accepted record for ME (ME-BRC website).

Snow Bunting *Plectrophenax nivalis*

Status. Regular and usually common fall and winter transient and visitor, some lingering into early spring.

Early reports to 1950. The first state record appears to be that of Maynard (1871), who reported birds in Coos County in late Oct 1869. Goodhue (1877a) called it a common winter visitor in variable numbers at Webster. At Lake Umbagog, Brewster found it regular in late fall, his earliest there being 11 Oct 1882 and highest count 100 there on 26 Oct 1882 (Griscom 1938). Dearborn (1898) said it was a regular winter visitor to Belknap and Merrimack Counties but irregular as to timing and numbers; he also reported that Goodhue took an adult male specimen at Webster in [early?] June. In the Durham area, Dearborn (1903) reported it from late October to April, the fall peak migration period in November and peak in spring in early April.

Allen (1903) considered it “rather common” though much more so on the coast than inland; he also reported a specimen at the Acworth–Silsby Public Library taken locally on 6 Apr 1883, and he corrected the erroneous nest report of Audubon (1860, Vol. III) in the White Mountains which certainly was that of a Dark-eyed Junco. Marble (1907) had only 1 very early report at Crawford Notch on 10 Sep 1903, the only known record for that month. Near Dublin, Thayer (1912) considered it a “fairly common but very irregular” visitor from October to April. Wright (1911) called it a regular winter visitor in the Jefferson area. At Concord, White (1924b)

thought it an irregular winter visitor between extreme dates of 10 Nov 1924 and 26 Mar 1906, but he later collected 1 at Concord 2 Jun 1928 (MCZ #292926), the latest known documented spring record. Allan (1931) reported it for the Isles of Shoals on 29 Dec 1929, 23 Feb 1930, and 1 Apr 1930 without indicating in which state.

Reports submitted to RNEB in 1936–1950 show it to be a regular and occasionally common fall and spring migrant and winter resident, mostly at the coast. Earliest in fall was a “large flock” near the top of Mt. Washington 1 Oct 1937 (Mrs. Mills), the known elevation record at 6000 feet or more; earliest at the coast was 14 at Rye 17 Oct 1950 (T. Richards); earliest in the Merrimack River valley was 1 at New Hampton 20 Oct 1949 (V.H. Hebert); and earliest in the Connecticut River valley was 35 at Canaan 27 Oct 1940 (A. McAlister *et al.*). Concentrations of birds in the 100–200 range appeared at the coast most often in November, possibly southbound birds, and inland concentrations were found any time from mid-December to early March. Northbound migration usually began by late February or early March. Latest record for the coast was 2 at Seabrook 21 Mar 1948 (T. Richards), for the Connecticut River valley was 1 at Colebrook 24 Mar 1950 (F. Allen), and for the Merrimack River valley was 1 at New Hampton 6 Apr 1947 (V.H. Hebert).

In summary, though numbers and the timing of arrival and departure have varied, this species appears to have been regular and occasionally common since 1800.

1950 to present. Continues regular and sometimes common.

Fall. By far the earliest known arrival is 1 in the tundra zone near the summit of Mt. Monroe at 5384 feet elevation 31 Aug 2006 (D. Govatski), next earliest being 1 at the coast 12 Oct 1970 at Rye (H.T. Rice) and 5 at Sargent’s Purchase 12 Oct 2009 (W. Sweet). Peak migration period is typically the last week of October through the first 2 weeks of November. Peak fall counts are 800 at the coast 3 Nov 1968 (R.W. Smart) and 1000+ at Seabrook 31 Oct 1969 (L.G. and E.W. Phinney); counts in the 200–500 range have become nearly annual since 1995. Many birds have passed southward by late November and numbers present in the coastal region by CBC time can vary from very few to 100+. Earliest fall arrival in the Merrimack River valley is 2 at New Hampton 12 Oct 1956 (V.H. Hebert), and earliest in the Connecticut River valley is 8 at Jefferson 17 Oct 1965 (R.W. Smart). Late fall numbers inland can vary from almost none to 50 or rarely more. Extreme dates for migrants in the Star Island area are 16 there on 26 Oct 1969 (R.W. Smart *et al.*) to 4 at Jeffreys Ledge 16 Nov 1975 (L.G. Phinney *et al.*).

Winter. At least a few are nearly always present in the coastal region through the winter and flocks up to 200 are occasional. In some years numbers are much higher inland than at the coast and flocks in both major river

valleys can reach the 200–350 range. Peak winter count for the Merrimack River valley is 1000 at Concord 19 Feb 1954 (T. Richards) and for the Connecticut River valley is 1000 at Woodsville 9 Jan 1951 (L. Miller). Most birds begin moving north by late February or early March; 700 at Westmoreland 25 Feb 2007 (D. Clark) and 75 at Charlestown 24 Feb 2002 (E.A. Masterson, A. Greenwood). A late high coastal count is 380 at Durham 22 Mar 2008 (S. Young). Peak spring migration period is typically the middle 2 weeks of March; almost all are gone by late March.

Spring. Often lingers later inland than at the coast, especially in the Connecticut River valley. Latest known spring report at the coast is 1 at Hampton 16 Apr 2007 (R.W. Smart, E.W. Phinney *et al.*). Latest in the Merrimack River valley is 1 at New Hampton 5 Apr 1956 (V.H. Hebert). Latest records in the Connecticut River valley are 7 at North Haverhill 2 May 1971 (R.J. Bradley) and 1 at Pittsburg 1 Jun 1956 (H.C. McDade *et al.*). One at White and Seavey Islands 29 Apr 2001 (D. Hayward, A. LeFrancois) and a straggler there 7 May 2004 (M. Barney *et al.*).

FAMILY PARULIDAE

Ovenbird *Seiurus aurocapilla*

Status. A common seasonal migrant and breeder up to about 3000 feet elevation; rare in early winter.

Early reports to 1950. A very common summer resident and migrant in all of the state except the extreme north 1850–1950 (Samuels 1867, Goodhue 1877a, Dearborn 1898, Howe 1901–1903, Allen 1903, Dearborn 1903, Wright 1911, Thayer 1912). Brewster found it scarce at Lake Umbagog in the 1870s (Griscom 1938). The Dwight collection contained 6 taken at Hollis between 10 May and 16 August 1875–1886 (AMNH #383513–383518). Marble (1907) noted an increase at Crawford Notch 1908–1927. A brood was observed in Antrim (Cooper 1893) and late afternoon singing was noted at Mt. Chocorua in 1918 (Spencer 1919). Allen (1903) reported it common almost to 3000 feet elevation in the mountains and repeated an observation at Warren 2 Oct 1895 (W. Faxon). Wright (1911) called it a common summer resident in the Jefferson region up to 2200 feet elevation; his latest sighting was 8 Oct 1904. One was caught by a cat at Troy on 24 Nov 1922 (*fide* J. Lowe). At Concord, White (1924b, 1937) called it a very common summer resident and seasonal migrant, and by 1930–1936 G. L. Perry found that it had increased significantly in the Lake Umbagog region (Griscom 1938).

Reports submitted to RNEB 1936–1949 show the earliest spring arrival at Manchester 28 Apr 1939 (E.J. Goellner) and as far north as Colebrook 6 May 1949 (D.W.

Brainard); usual first arrivals were by 4–10 May. Earliest fall migrants were detected by the third week of August and peak fall migration season was in the first 2 weeks of September. Latest RNEB report in fall was 1 at Andover 24 Sep 1945 (K.C. Elkins).

Probably not an abundant summer resident in precolonial times when much of the state was covered with dense coniferous forest or during the peak of acreage under agriculture in the late 1800s. It appears to have benefitted especially from reforestation during the 1880s to 1950 as the mixed woodland which it prefers replaced pastures and grasslands over much of the state including Coos County in the north where it had been scarce in the late 1800s.

1950 to present. Overall still common and a modest increase 1950 to date. Its breeding population in hardwoods and mixed forest was considered stable by Hunt (2009b).

Spring. Earliest arrivals are 1 on 26 Apr at Concord in 2008 (P.D. Hunt) and at Seabrook in 2009 (S.R. and J. Mirick). Mean first arrival 1950–1980 was 4 May, while in 1991–2009 it was 1 May. Most first sightings were in the lower Connecticut and Merrimack River valleys. High spring counts include 150 at Lake Umbagog 19 May 1964 (V.H. Hebert) and 68 at New Hampton 11 May 1965 (V.H. Hebert *et al.*). After the mid-1960s peak counts were lower, usually in the 15–25 range, with the exception of 55 at Nottingham 11 May 1996 (A. and B. Delorey) and 50 in Sunapee 31 May 1997 (B. Burdett). A late migrant was at Star Island 1 Jun 1969 (ASNH field trip). The elevation record for the state is 1 photographed at the summit of Mt. Washington at 6288 feet on 15 May 2005 (T. Markle; NHBR 24 [1] back cover).

Summer and breeding. A late nest with eggs was found 3 Jul 1982 (S.B. Turner *in* Foss 1994), and a nest with 3 eggs was in Monroe 16 Aug 1956 (I.F. Hunt), possibly second broods. The *Atlas of Breeding Birds* project 1981–1986 showed it breeding in 98% of priority atlas blocks, the 3 missing being remote and difficult of access (Foss 1994). National BBS data suggest a population increase east of the Mississippi River with New Hampshire being within the area of maximum abundance in North America (Robbins *et al.* 1986). New Hampshire BBS data show an increase from a total of about 300 individuals per year to about 450 per year 1966–1994 (NHBR 1994 13 [2]: 33). Also from 1993–2002 the Ovenbird was by far the commonest warbler found on all BBS routes, averaging 21.3 birds per route. Prior to the BBS surveys, high summer counts were 178 at Lake Umbagog in 1959 (V.H. Hebert *et al.*), 114 pairs at New Ipswich in 1960 (C. Wellman), and 38 pairs at New Hampton in 1960 (R.W. Smart, V.H. Hebert). Long-term New Hampshire BBS population trend data show virtually no increase in 1966–2009 or in 1999–2009 (Appendix IV). In the

Squam Lake region it was considered very common to abundant in deciduous and mixed woodlands in summer (Ridgely 1977), Allison and Allison (1979) thought it a common summer resident near Dublin, and Cohn-Haft (1995) considered it an abundant summer resident in the Second College Grant. Lambert (1999) reported on nesting success adjacent to new forest clear-cuts in the White Mountains.

Fall. Southbound birds can be expected in the third week of August with a peak in mid-September, but stragglers are found occasionally into early October. One was at Star Island 30 Aug 1999 (R.W. Suomala *et al.*). Twenty-three were banded at Center Harbor 11 Aug–26 Sep 1976 (J.P. Merrill). Of 10 October records since 1950, 5 were at the coast; the others were from Keene, Bedford, Andover, Gilsum, and the latest at Concord 28 Oct 2006 (R.A. Quinn). November reports include single birds at Rye 6 Nov 1979 (E.W. Phinney), Manchester 8 Nov 1970 (V. Gilman), and Concord 28 Nov 1975 (H.B. Miller).

Winter. Some very late reports include Charlestown 19–20 Dec 1974 (W.W. Kidder, G.L. Kidder *et al.*), Nashua Oct 1982 to 18 Jan 1983 (Ingram *fide* R.A. Quinn), Swanzey 17 Dec 1996 to 20 Jan 1997 (R. Brusie), Newington 18 Dec 1998 (S.R. Mirick), Rye 26 Jan 2002 (R.W. Suomala), 1 at Peterborough 7–23 Dec 2005 (D. Vernier *et al.*; photo), 1 at Hanover 6–30 Dec 2005 (M. Choukas; photo), Westmoreland 26 Jan 2007 (G. Seymour), and the northernmost at Lancaster 17 Dec 2004 (S. Pratt).

Taxonomic note. The form *S. a. furvior* (AOU 1957), which breeds in Newfoundland and which has been documented in MA (Griscom and Snyder 1955), surely passes through New Hampshire annually in spring and fall but has yet to be documented here.

Worm-eating Warbler *Helmitheros vermivorum*

Status. A rare visitor from the south with over 10 sight records and 2 definitive photographs.

Early reports to 1950. A sight record at Manchester 1 Oct 1900 (MacLeod 1900) was discounted by Allen (1903). Goodhue (1922) repeated a report at Concord 7–8 Aug 1904 (Abbott 1906) and included unsubstantiated sight records from Concord and Penacook by 2 of Ms. Abbott's friends. Bagg and Eliot (1937) mention records at Sandwich 31 Aug 1919 without providing the observer, and 1 at East Westmoreland 12 Sep 1924 (L.O. Shelley). Though 1 or more of these records may have been correct, Forbush (1929) considered the species a vagrant in northern New England and insufficiently documented for New Hampshire through the 1920s. No reports were published by RNEB 1936–1949.

1950 to present. Rare visitor usually in May and usually in the southeastern part of the state; never found north of the Lakes Region.

Spring and early summer. Appears rarely in April, possibly in conjunction with coastal storms or due to migration overshoot, but by far most often in May (Masterson 2004c). Spring reports range from 1 tape-recorded at Lyndeboro 30 Apr 1971 (M.R. Lein) which remained until mid-Jul. Other reports are 1 at Dunbarton 18 May 1975 (H.B. Miller), at Portsmouth 14 May 1979 (T. Butler), at Durham 24 May 1985 (S.R. Mirick *et mult.*; tape recorded by T. Butler), at Pawtuckaway State Park in Nottingham 21 May–11 Jun 1994 (S.R. Mirick, A. Delorey *et al.*), at Enfield 9 May 1999 (P.D. Hunt), at Hanover 12 May 2002 (S. Sturup), at Pawtuckaway State Park 27 May 2004 (E.A. Masterson), and 1 banded on Star Island in the Isles of Shoals 30 May 1999 (R.W. Suomala; NHBR 18 [1]: 34; photo).

There are 3 June–July reports: at Center Sandwich 25 Jun–1 Jul 1976 (E. Tailby, S.A. Fogleman, E.W. Phinney; see Ridgely 1977), and a singing territorial male in South Hampton 1 Jun to 14 Jul 1985 (J.W. Berry; G.W. Gavutis, Jr.). The latter bird qualified as a “probable breeder” during the 1981–1986 *Atlas of Breeding Birds* project despite lack of a mate (Foss 1994). A singing bird was at Hampton 14–15 May 2010 (S.R. Mirick, T. and D.B. Donsker; photo by L. Medlock NHBR 29 [1]: 34). A singing bird was found at Pawtuckaway State Park in Deerfield 9 Jun 2010 (L. Medlock, R.P. Fox, D.D. Fox, A.R. Keith).

Fall. Four reports: 1 at Star Island 1 Sep 2004 (M. Schoene), 1 at Seabrook 20 Sep 1969 (D.J. Abbott, E.W. Phinney), 1 at Lee 29 Sep 2008 (A. Eaton), 1 at Rye 8 Oct 2008 (T. Bronson).

Louisiana Waterthrush *Parkesia motacilla*

Status. Has expanded its range from the south since 1900, though it certainly could have been overlooked for much of the 19th century. Now an uncommon spring migrant and a widespread but local breeder south of the mountains, very rare north of there.

Early reports to 1950. The first state report was at Dublin 19 Aug 1901 (Thayer 1902, 1912). Two other early sight reports were at Jaffrey 29 May 1920 (L.B. Cutter) and 30 May 1923 (N. Spaulding) were considered hypothetical by Forbush (1929). Three were reported at Washington 25 Jun 1940 (G. Allen), and breeding was confirmed in Harrisville 27 May 1941 when 4 fresh eggs were found in a nest (Abbott 1942); he also reported that another pair was suspected of breeding in Dublin in spring 1941. The 4 next reports were 1 at Winchester 9 Jul 1946 (L. Clark), 1 at Nottingham 18 May 1947 (W. Cottrell *et al.*), at Sandwich 12–31 May 1948 and 11 May 1949 (T. Richards), and adults feeding fledged young at Chesterfield 9 Jun 1949 (R.H. MacArthur *et al.*).

1950 to present. Major increase in reports and breeding range extending northward, but its population trend is

considered uncertain in hardwood and mixed forest by Hunt (2012).

Spring. An early migrant. Earliest known arrival dates are Walpole 5 Apr 1985 (R. Bertin) and New Hampton 10 Apr 1969 (V.H. Hebert.); mean first arrival date is 20 April. Most first reports occur in the Merrimack River valley, often near known breeding areas. Peak spring migration period is the last week of April and the first week of May. Last arrivals can be as late as mid-May or from unlikely breeding locations such as Durham 12 May 1964 (A.C. Borror). Northernmost reports include Woodstock 19 May 1957 (H.C. McDade *et al.*), Dalton 11 May 1958 (V.H. Hebert *et al.*), Pinkham’s Grant 18 May 1968 (T. Richards), and Carroll 20 Jun 1999 (J. Williams).

Summer and breeding. The known breeding distribution in the 1950s ranged north to Hanover in the Connecticut River valley to Sandwich, New Hampton, and Salisbury in the Merrimack River drainage, and 1 record south to Exeter. Breeding numbers had increased to 7 pairs at New Hampton (V.H. Hebert *et al.*) and 6 pairs at Walpole in 1957 (K.C. Elkins). By the 1970s the breeding area had expanded both to the south and north, with a few records even north of the mountains. In the 1980s, the number of priority atlas blocks containing confirmed and probable breeding expanded to a total of 32, primarily in the 7 southernmost counties, as shown in the *Atlas of Breeding Birds* 1981–1986 (Foss 1994). New Hampshire BBS population trend data show virtually no change in 1966–2009 and a small increase in 1999–2009 (Appendix IV). In the Squam Lake region Ridgely (1977, 1988) reported it along rushing streams up to 1700 feet elevation. It was found on territory as far north as Lyman 1 Jun 2008 (S.B. and M. Turner). Cohn-Haft (1995) reported a pair with young at the Second College Grant 3 Jul 1982, the only confirmed breeding in Coos County.

Fall. One of the earliest warblers to leave in summer (Robinson 1995), often by the end of July: an example is at Nashua 27 Jul 2003 (W. Harris). After breeding, birds often disperse from nest sites up to 0.5 mile before leaving the area for the south (Brainard 1953). Peak south-bound migration period is early August, and all birds are usually gone by late August (Dunn and Garrett 1997). Latest known records are 3 at New Hampton 18 Sep 1952 and 1 there 20 Sep 1957 (both V.H. Hebert).

Northern Waterthrush *Parkesia noveboracensis*

Status. Common spring and fall migrant and widespread summer resident and breeder.

Early reports to 1950. The first record for the state appears to be 1 taken by a now unknown collector at Gorham 4 Aug 1869, specimen at MCZ (#294500). Goodhue (1877a, 1922) thought it a regular migrant but only an uncommon summer resident at Webster. Brew-

ster thought it a common spring migrant but uncommon in fall and a common summer resident and breeder at Lake Umbagog 1871–1909 (Griscom 1938). Dearborn (1898, 1903) called it a moderately common migrant and uncommon breeder in Belknap and Merrimack Counties as did Scott (1921) and Dearborn (1903) in the coastal region. Howe (1901–1903) considered it only an uncommon migrant at Bridgewater, and Marble (1907) only found it a September migrant at Crawford Notch. Allen (1903) thought it a common seasonal migrant and a local breeder statewide, perhaps more numerous north of the White Mountains. Thayer (1912) considered it a common migrant but a rare breeder near Dublin. Wright (1911) called it a common summer resident and breeder, finding 10+ pairs along Israel River in Jefferson 1905–1907, and recording 1 at about 1900 feet elevation in Pinkham Notch. At Concord White (1924b, 1937) found it a common migrant and a regular and moderately common breeder, his earliest spring arrival being 30 Apr 1935.

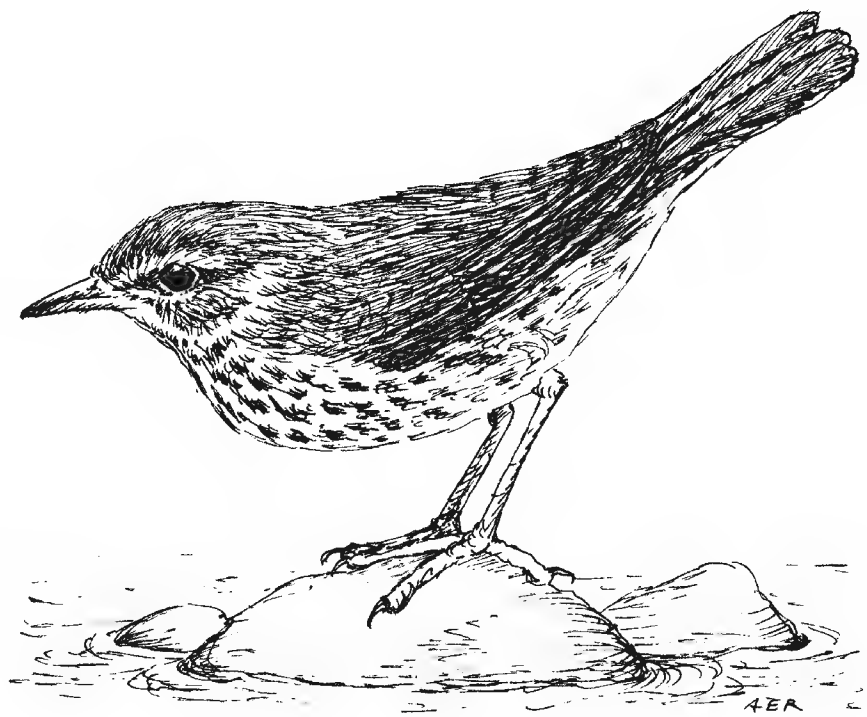
Reports submitted to RNEB provide an early arrival date of 26 Apr 1948 at Sandwich (T. Richards), usual first arrival 2–12 May, and late migrants passing through into the last week of May. An early migrant in fall, the first southbound birds can be found by the last few days of July such as 1 at Fitzwilliam 25 Jul 1937 (W. Taber) or the first week of August. Peak fall migration period was the last week of August and the first week of September, and latest recorded was 1 at Monroe 20 Sep 1949 (I.F. Hunt).

In summary, this appears never to have been an abundant breeding species in any part of the state, but reforestation 1880–1950 certainly created more of the wooded swamp habitat it prefers.

1950 to present. Widespread and moderately common though less so than in the 1980s; listed as declining in hardwood and mixed forest habitat near water such as wooded bogs, swamps, and edges of Beaver ponds since 1990 by Hunt (2009b).

Spring. Earliest arrivals are at Goffstown 12 Apr 1985 (P.D. Hunt) and at Kensington 16 Apr 1998 and 17 Apr 1997 (both G.W. Gavutis, Jr.). Mean first arrival since 1950 has been 27 April. Most first arrivals were in the Merrimack River valley; nearly all in the southern half of the state, exceptions being at Lyman and Monroe in the Connecticut River valley. Most daily spring counts have been 1–10, several were in the 11–20 range, and peak counts were 84 at Lake Umbagog 17 May 1964 (V.H. Hebert), 32+ in the Jefferson–Whitefield area 8 May 1965 (H.C. McDade), and 42 at Nottingham 17 May 1999 (A. and B. Delorey). Peak migration period is typically the middle 2 weeks of May. Late migrant dates have been 1 at Epsom 9 Jun 1970 (BBS), and 1 banded on Star Island 8 Jun 2000 (R.W. Suomala).

Summer and breeding. The *Atlas of Breeding Birds* proj-



ect 1981–1986 found it in 63% of priority atlas blocks, more common from the White Mountains northward than in the south where it is more patchily distributed, especially in the coastal lowlands and the lower portions of the Connecticut and Merrimack River valleys. The highest summer counts come from Coos County: 50+ Pittsburg 1961 (R.W. Smart, V.H. Hebert), 20 Pittsburg 7 Jun 1993 (A. and B. Delorey), 18 Pittsburg 17 Jun 2008 (E.B. Nielsen), and 15 at Errol 1 Jun 1997 (J.W. Berry). Nests most commonly below 2500 feet elevation but rarely above 3000 feet (T. Richards *in* Foss 1994). New Hampshire BBS population trend data show an average decrease of about 3.0% per year in both 1966–2009 and 1999–2009 (Appendix IV). If there is some competition with Louisiana Waterthrushes which have been invading the state since the 1940s, this may explain why the peak historical spring and summer counts of Northern Waterthrushes are before 1980, but the general decline of many species of long-distance migrants since then is probably a better explanation. Cohn-Haft (1995) found it a fairly common breeder at the Second College Grant.

Fall to winter. Early reports of southbound birds include 1 at White Island 26 Jul 1999 (D. Hayward), 1 at Star Island 5 Aug 2002 (J. Taylor), 2 in Concord 6 Aug 2005 (R.A. Woodward, R.A. Quinn), and 6 at the coast 17 Aug 1969 (R.W. Smart). Peak migration period is late August and early September, usually involving 1–8 individuals. Extreme dates for Star Island are 18 Aug 1981 (J. Ginnaven) to 30 Sep 2007 (E. Masterson *et al.*). Mean date for the last report was 30 September. A majority of these reports were from the Merrimack River valley, coastal reports were second most frequent, and few came from the Connecticut River valley. Virtually all last reports were from south-central parts of the state; 2 northern exceptions were at Whitefield 27 Sep 1964 (R.J. Bradley) and at Bethlehem 7 Oct 2003 (S.B. and M. Turner). All birds are usually gone by late September. Unusual late records

are 1 at Concord 10 Nov 1953 (T. Richards), 1 at Bedford 1 Nov 1967 (A.E. Lajoie), and an exceptional late report at New Hampton 27 Nov 1966 to 24 Jan 1967 (V.H. Hebert, R.W. Smart *et mult.*).

Taxonomic note. The local breeding form in the state is nominate *P. n. noveboracensis*. The form known as “Grinnell’s” Northern Waterthrush *P. n. notabilis* from the west has been reported once. Goodhue (1922) noted 1 taken at Tamworth 20 May 1890 by F. Bolles, given by him to W. Brewster who deposited it at the MCZ (#226525). Despite Brewster’s apparent concurrence in its racial identity, recent examination of the specimen shows it to be indistinguishable from the nominate race.

Golden-winged Warbler *Vermivora chrysoptera*

Status. A rare and declining species which is no longer thought to be breeding in the state. A species of Special Concern in New Hampshire.

Early reports to 1950. A rare resident on the coastal plain and in southern Cheshire and Hillsborough Counties, accidental elsewhere (Coues 1868). Early reports include a specimen from Hampton Falls in May 1887 (W.E. Cram *in* Allen 1903), a specimen from Durham 24 May 1898 (Dearborn 1903), 1 near Manchester 12–15 May 1900 (Batchelder 1900), 1 seen on Jaffrey Road near Dublin in 1900–1909 (Thayer 1912), and birds in the Concord area late May–early Jun 1902 (W.R. Varick) and on 15 May 1934 (Miss F.M. Abbott) reported by White (1937). Hopkins (1960) reported it at Manchester in spring during 7 years in the 1911–1924 period. The only reports submitted to RNEB 1936–1949 are 1 at Manchester 17 Aug 1939 (E.J. Goellner) and 1 at Andover 9 Aug 1941 (K.C. Elkins), both possible postbreeding wanderers.

In eastern MA it increased significantly from about 1874 to the 1940s (Allen 1869–1870, Townsend 1905, Brewster 1906) but has declined markedly since (Veit and Petersen 1993). These trends have also been reflected in New Hampshire. This species usually requires open fields and early reforestation succession habitat and disappears as woodland matures. Its range has been shifting north and west at least since the 1940s (Confer 1992, Dunn and Garrett 1997).

1950 to present. Declined steadily as a breeding species and has been replaced by Blue-winged Warbler as its preferred shrubland habitat has matured to forest (Hunt 2009b, 2012). Loss of wintering habitat and Brown-headed Cowbird parasitism may also be contributing factors. In the 1950s through the mid-1970s, up to 10 reported per year but less than 5 per year in 1988–2003 (WAP 2005) and even fewer since.

Spring. Earliest known records are Kingston 6 May 1983 (R.S. Aaronian) and Squam Lake 7 May 1977 (B.S. Ridgely) and mean first arrival date was 12 May. Migra-

tion is considered finished by the end of May. Twenty-six of 40 first reports since 1950 are from the southeastern coastal plain including 1 from Seavey Island 9 May 1999 (D. Hayward); 9 of the 40 were from the Merrimack River valley including 1 at New Hampton 15 May 1968 (V.H. Hebert), the 1977 Squam Lake report, and 1 at North Sandwich 26 May 2003 (R.S. Ridgely, A.J. Vazzano); and 5 were from the Connecticut River valley including 2 at Hanover 11 May 1955 (H.C. McDade *et al.*) and 3 Jun 1996 (P.D. Hunt). One at Albany 19 Jun 1994 (D. Fahl-King, B. Banks) and the northernmost known report at Randolph 1 Jun 2006 (N. Peters) were both well north of its usual breeding range and of the known Blue-winged Warbler breeding range. Two recent reports are single birds at Epping 11 May 2004 (G. Tillman) and Randolph 1 Jun 2006 (N. Peters).

Summer and breeding. Over 20 published reports ranging from 24 May to 5 July since 1950 have indicated possible breeding activity. These reports ranged as far north as Hanover, Sandwich, and Glen, though most were on the southeastern coastal plain. One was reported at Warner 4 Jun 1964 (K.C. Elkins) and several sites “supported territorial males in the Exeter/Kensington area beginning about 1958 and continuing during the 1970s and 1980s” (Foss 1994). Smith (1979) mentions observations in more than 20 locations 1963–1979, especially in the southeast. The *Atlas of Breeding Birds* project 1981–1986 found 2 confirmed, 2 probable and 1 possible breeding location in the near-coastal area (Foss 1994). New Hampshire BBS population trend data show a significant decline of 6.3% per year in both 1966–2009 and 1999–2009 (Appendix IV). A recent report is 1 at Northwood 3 Jul 2001 (D. Wells *et al.*). Sometimes occurs at higher elevations than Blue-winged Warbler (R.A. Quinn pers. comm.).

Fall. Now seldom reported. An early migrant, the earliest suspected southbound bird was 1 at East Kingston 31 Jul–1 Aug 1965 (D.W. Finch). Peak migration period is the last 2 weeks of August. Most fall reports are from the coastal plain; 1 banded and photographed at Rye 2 Sep 1971 (E.W. Phinney). Probable postbreeding wanderers found far north of breeding locations include 1 at Jefferson 19 Aug 1989 (R.J. Bradley) and 1 at Bristol 4 Sep 1997 (V.S. Wright). Latest known in fall was 1 at Star Island 14 Sep 2004 (M. Harvey) and 1 at Lee 2 Oct 2008 (A. Eaton) other than an exceptionally late 1 at Londonderry 11 Nov 1960 (H.A. Reynolds).

Taxonomic note. See Appendix I for a discussion of hybrids between this and the following species.

Blue-winged Warbler *Vermivora cyanoptera*

Status. This species expanded its range into New Hampshire in the last 50 years, arriving first in the coastal area and spreading through the southern third of the state in

suitable habitat and at elevations up to 1700 feet. Now it is uncommon to locally common in appropriate habitat in the southern parts of the state.

Early reports to 1950. Stearns (1887) and Forbush (1929) had no satisfactory state records. The first known sighting was 26 Jul 1935 at Manchester (Goellner 1936). Goodhue (1922) heard what he thought was this species at Webster 16 Jun 1905, but never was able to see it. No reports in RNEB 1936–1949.

1950 to present. Major increase from 1950 to about 1990 in both numbers and distribution followed by a decline as a breeding species as its preferred shrubland habitat has become scarcer. Population trend is listed as uncertain by Hunt (2012). Its range expanded from the south and west.

Spring. Following the 1935 sighting, the second certain state report was at Wilton 21–22 May 1955 (D.W. Finch). Earliest known arrivals are 28 Apr at Windham in 1993 (K. Folsom) and at Hinsdale in 2009 (K. Klapper). Mean arrival date since 1986 is 4 May. An early migrant, general arrival is usually by the second week of May. While the majority of first arrivals appeared in the southeastern part of the state in the period from 1955–1970, by 1971–2006 first-arrival locations had spread from the coastal region to localities north and west: 2 reports from Concord (1956, 1966), as far north as New Hampton (1971, 1973) and Moultonborough (1984), and as far west as Chesterfield (1979). In 1986–2006, birds were reported from Walpole (1990), Enfield (1991), Hanover (1992, 1994, 1996), and Easton (1997) in the Connecticut River valley; and at Plymouth (1999), Easton (1997), and Hill (2003) in the Pemigewasset River valley. The peak one-day count at a single site was 10 at Weare 21 May 2003 (P. Newbern). Likely migration overshoots were found at Jefferson 15 and 26 May 2000 (C. Bretton *et al.*), the northernmost known site for the state.

Summer and breeding. Occasional late spring and summer reports continued and increased from 1960, and “consistent spring observations in Kensington, beginning in 1959, suggest that the state’s first nesting attempts may have occurred there” (Foss 1994). The first confirmed breeding records were at Hollis in 1966 (T. Richards), at Newfields in 1967 (L.G. Phinney), and at Kensington in 1967 (R.N. Lake). The *Atlas of Breeding Birds* project 1981–1986 found evidence of possible breeding in 4 priority atlas blocks, probable breeding in 5 priority atlas blocks, and confirmed breeding in 1 priority atlas block and 3 non-priority atlas blocks, all in the southeast (Foss 1994). Subsequent reports from 1987 to date in June and July suggest continued breeding in that area, including 6 at Dover 4–5 Jun 2002 (M. Suomala). New Hampshire BBS population trend data show an average of about a 3.0% increase per year in 1966–2009 and 1999–2009 (Appendix IV), the increase in the latter period perhaps

being suspect. Surveys of powerline rights-of-way in 2000–2001 (Wells 2001) demonstrated these to be desirable shrub habitats for this species. Nineteen birds were reported from 10 localities in summer 2008 (v.o.).

Fall. Southbound migration begins by the first week of August and peaks in mid-August; all the birds are usually gone by the first week of September. Extreme dates for the Isles of Shoals are 1 at Star Island 17 Aug 1999 and 1 on 18 Aug 2000 to 1 there 14 Sep 1999 (all R.W. Suomala *et al.*). Notable other fall reports include 2 at Brentwood 9 Sep 2006 (T. Bronson *et al.*), and single birds at Chester 14 Sep 1999 (A. Delorey), Hinsdale 14 Sep 2007 (H. Galbraith), Rye 15 Sep 1996 (J. Romano, S. Walker), and at Rye 3 Oct 1998 (S.R. Mirick).

Taxonomic note. See Appendix I for discussion of hybrids between this and the prior species.

Black-and-white Warbler *Mniotilta varia*

Status. A common spring and fall migrant and very common breeder below 2000 feet elevation statewide; breeds sparingly above that elevation.

Early reports to 1950. Considered common to very common from the White Mountains southward at Webster (Goodhue 1877a), in Belknap and Merrimack counties (Dearborn 1898), in the Durham area (Dearborn 1903), in the Dublin area (Thayer 1912), and near Bridgewater (Howe 1901–1903). Maynard (1871) thought it “not common” in Coos County and Marble (1907) thought it uncommon in summer at Crawford Notch. The Dwight collection included 6 specimens taken at Hollis between 6 May and 8 July in the years 1875 and 1886 (AMNH #379743–379748). Allen (1903) called it a common migrant in most of the state but only an uncommon summer resident, occurring in the mountains up to 3000 feet elevation. Brewster found it a rare migrant and a rare summer resident near Lake Umbagog in 1871–1909 and had no confirmed nesting until 1903 (Griscom 1938). Wright (1911) reported it as common as far north as Jefferson and Lancaster; his latest fall date there was 28 Sep 1907. Lord’s (1918) earliest spring arrival at Hanover was 22 April and his six-year average was 1 May. At Concord (White 1924, 1937) called it a common migrant and summer resident between extreme dates of 27 Apr 1921 and 27 Sep 1924.

By 1930–1936 it had become a common summer resident at Lake Umbagog (G.L. Perry) with the increase of hardwoods in that area (Griscom 1938). Relatively few reports were made to RNEB in 1936–1949. Earliest reported spring arrival was 24 Apr 1948 in both Monroe (Hudson) and New Hampton (V.H. Hebert), and usual first arrival was in the first week of May. Virtually all fall reports were in September and latest was 5 Oct 1945 at Andover in the Merrimack River drainage (K.C. Elkins).

In summary, it appears that between about 1850 and 1900 this species expanded its range in the northern part of the state as the original conifer-dominated forests there were cleared in the late 1800s (Forbush 1929).

1950 to present. Though still common, its breeding population has been declining since 1990 (Hunt 2009b).

Spring. Early arrivals include Goffstown 15 Apr 1985 (H.W. Parker), Kensington 16 Apr 2000 (R. Aaronian, P. Greer), and 3 times on 17 April. Mean first arrival is 25 April. First arrivals have been appearing earlier: 1950–1980 mean first arrival was 26 April; in 1981–2008 mean was 23 April. Nearly all first arrivals were in the southern third of the state. Typical spring single-locality counts are 1–8. Peak counts include 34 at New Hampton 6 May 1960 (V.H. Hebert *et al.*), 33 at Weare 4 May 2003 (P. Newbern), 25 at Hanover 10 May 1961 (C. Wellman), and 50 at Star Island 14 May 2011 (E.A. Masterson). Peak migration period is the first 2 weeks of May and small numbers may still be moving through into early June though indistinguishable from local residents. A late migrant report is 1 at Star Island 20 May 1978 (R.C. Hebert).

Summer and breeding. BBS data from 1966 to 1987 show this species to have had a high density in New Hampshire relative to other New England states and that its population remained stable in this period. The BBS totals averaged about 120 individuals per year with higher counts 1969–1972. The *Atlas of Breeding Birds* project 1981–1986 showed it to be a common and very widespread breeder, being reported in 94% of priority atlas blocks. Longer-term New Hampshire BBS population trend data show an average of about a 2.2% decline per year in 1966–2009 and 1999–2009 (Appendix IV). Peak summer counts include 39 pairs at New Ipswich, summer of 1961 (C. Wellman), and 25 pairs at New Hampton in 1962 (V.H. Hebert). Rarely found above 2000 feet elevation; record elevation is 2900 feet in Chatham in summer 1968 (D.W. Brainard).

Fall. Birds found in late July such as 3 at East Concord 27 Jul 1982 (B.R. Hayes) could be very early southbound migrants or postbreeding dispersers. General migration typically begins in early August and peak migration period is usually the last week of August and the first 2 weeks of September during which period peak counts have ranged 18–20 per day. Mean last fall sighting 1950–2007 is 7 October. However, the 1950–1980 mean is 3 October and 1981–2007 mean is 8 October, showing a pattern of increasingly late departures. All birds are usually gone by mid-October. The majority of last reports are from the southern Merrimack River valley and about a third are from the coastal region. Latest known records are 1 at Exeter 16 Nov 1992 (R. Hughes), at Concord 23 Nov 1975 (E.K.D. Lewis), and at Durham 29 Nov 1976 (T. Bickel).

Winter. Reports include 1 at Merrimack 17 Jan 1993 (K. Metz) and 1 at Deerfield 4 Feb 2006 (J. Perry).

Prothonotary Warbler *Protonotaria citrea*

Status. A rare southern warbler reported in spring or early fall fewer than 10 times in the past half-century.

Early reports to 1950. The first state record appears to be of a male, a presumed female and 2 young of the year seen at East Westmoreland 16 Sep 1924 (L.O. Shelley, M. and F. Thompson) described in detail and their actions observed for 10+ minutes (Bagg and Eliot 1937). One was seen in Concord 22–24 May 1929 (Goodhue 1922–additions to 1930; Milne 1929; Welsh *et al.* 1929; White 1937). One was reported at Exeter 28 Apr 1949 (M. Tuttle; RNEB). A possible New Hampshire specimen was taken on 18 May 1934 which was in the Luman R. Nelson collection at the Skinner Museum in South Hadley, MA, in 1972 (Keith 1975a), but its present whereabouts are unknown.

1950 to present. Very rare in spring and fall.

Spring. This species often overshoots its breeding range, sometimes due to storms, and appears in New England in April and May. Six accepted spring records range from 1 at Hanover 25 Apr to 17 May 1971 (C. Kellogg *et mult.*) to 1 at Epping 26 May 2007 (G. Tillman *et mult.*). Other dates include Exeter 17 May 1972 (L.G. Phinney), Hebron 18 May 1982 (V.S. Wright), Lebanon 4 May 1994 (P.D. Hunt), and Lyman 20 May 1990 (S. Bogert *et mult.*).

Summer and fall. Only 2 accepted fall records: the northernmost known locality at the Second College Grant 2 Aug 1963 (H.C. McDade *et al.*) and 1 at New Hampton 15 Sep 1960 (V.H. Hebert). All spring and fall records are from the central part of the state in the Connecticut and Merrimack River valleys except Exeter in 1972 and the Second College Grant in 1963. Virtually annual in MA (Veit and Petersen 1993, BO database 2010), 6 accepted records for VT (C.C. Rimmer pers. comm.), and over 20 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Tennessee Warbler *Oreothlypis peregrina*

Status. A very uncommon summer resident in northern Coos County and sporadically in the White Mountains and possibly the western highlands. Its numbers fluctuate significantly in relation to Eastern Spruce Budworm outbreaks. An uncommon spring and fall migrant in the other parts of the state.

Early reports to 1950. First reported for the state by Brewster who found it very common at Lake Umbagog 1871–1876, virtually none in 1879, common in 1880, and virtually none again 1881, 1888, and 1896–1897 (Griscom 1938). Faxon (1889) and Torrey (1890) found

it in Franconia breeding in the summer of 1887, in May–Jun 1888, and in 1890. Thayer (1912) only saw it once near Dublin, in May 1897. One collected on the Isles of Shoals 9 Sep 1877 was reported as an Orange-crowned Warbler by Murdoch (1878) but was re-identified as a Tennessee by Brewster (1882a); the specimen cannot now be found. Chadbourne (1887) found 1 at 4000 feet elevation on Mt. Adams 2 Sep 1884, and Batchelder (1900) considered it a rare transient at Manchester. Goodhue (1877a) did not include it but later (1922) called it a rare but regular migrant at Webster. Dearborn (1898, 1903) had no records in Belknap and Merrimack Counties or at the coast nor did Howe (1901–1903) at Bridgewater or Marble (1907) at Crawford Notch. It was reported in Concord 17 May 1905 (Abbott 1906). White (1924b, 1937) thought it a rare transient there but only in spring 8–26 May, except when it was common in 1922 and 1935. In the Jefferson region, Wright (1911) thought it only a rare fall migrant, seeing only 1–2 per year except 29 Aug to 20 Sep 1910 when he saw over 12. Lord's (1918) earliest arrival at Hanover was 21 May, and 1 was reported singing and possibly on territory in Sandwich 17 Jul 1919 (Farley 1919). G. L. Perry found it had returned to the Lake Umbagog region in 1932–1933 but not in 1936 (Griscom 1938).

Reports submitted to RNEB showed the earliest arrival in spring 15 May 1949 at Jefferson (J. Whitehead) and latest arrival at Colebrook 6 Jun 1949 (D.W. Brainard). In fall the first southbound migrant was at New Hampton 18 Aug 1949 (V.H. Hebert) and latest was also at New Hampton 27 Sep 1947 (V.H. Hebert).

In summary, since first discovered in New Hampshire it has been a rather rare species, its breeding area in the state being near the extreme southern point of its range in New England. There is also ample evidence of population fluctuations in the extreme northern part of the state 1870–1910 and 1932–1936, and such fluctuations were also reflected in the number of migrants south of the breeding areas into the 1930s.

1950 to present. Declining as a breeding species (Hunt 2009b) and increasingly uncommon to rare as a migrant, especially in fall.

Spring. The earliest known arrival is at New London 1 May 1993 (B. Vernon), and mean first arrival date is 11 May. Most birds have passed through nonbreeding areas by the last week of May, and late migrants were 1 at New Hampton 1 Jun 1956 (V.H. Hebert) and a laggard or possible breeder at Woodstock in the White Mountains 23 Jun 1995 (J. Arp). Peak spring counts are sometimes related to Eastern Spruce Budworm outbreaks in the previous year, but on average spring numbers have declined. Typical daily counts 1950–1980 were about 10 and peak counts were 50 at Walpole 20 May 1958 (D.W. Brainard), 25 at Portsmouth 20 May 1975 (E.W. Phinney), and 25

at Hanover 23 May 1975 (S. Robinson). In 1981–2006 daily counts were in the 2–5 range and peak counts were only 5 at Berlin 26 May 1994 (M. and R.W. Suomala), 6 at Haverhill 16 May 1999 (A. Mudge), and 8 at Woodstock 13 May 1993 (P.D. Hunt).

Summer and breeding. The *Atlas of Breeding Birds* project 1981–1986 found only 1 confirmed and 3 probable breeding in priority atlas blocks, all but 1 of which were in northern Coos County. It may also breed in high mountain forest and has been found at Oakes Gulf on Mt. Washington 18–20 Jul 1946 (T. Richards), at Mt. Adams and Carter Notch in summer 1948 (R.P. Fox), at Mt. Jackson 13 Jul 1966, and Great Gulf on Mt. Washington 8 Jul 1967 (both T. Richards). An unusual report was a female on a nest at Cherry Pond in Jefferson 26 Jun 1999 (A. and B. Delorey). It has been observed that unmated male Tennessee Warblers sometimes sing and act territorially in summer at sites away from and south of usual breeding ranges. This appears to have occurred at New Ipswich 8 Jul 1960 (C. Wellman), especially 3–5 birds 14–22 Jul 1981 in New London (R.C. Vernon) and in Wolfeboro, Sandwich, and Albany that Jul (Quinn 1982); at Mt. Sunapee 18 Jul 1983 (T. Richards); at Mt. Kearsarge and Mt. Monadnock and elsewhere in southern New Hampshire in Jul 1987 (v.o.); at Jefferson and Enfield Jul 1997 (R.A. Quinn, P.D. Hunt); at Enfield (P.D. Hunt) and Bethlehem (A.J. Vazzano, M. Suomala *et al.*) in Jul 1998; and 2 at Gilmanton 15 Jul 2005 (J. Stockwell). One in Sandwich 9 Jun 1992 (P.D. Hunt) might have been a late migrant or possibly a nesting bird. Cohn-Haft (1995) said its numbers varied at the Second College Grant from many in 1982 to none in 1986. New Hampshire BBS population trend data showed an average of a 4.0% decline per year in 1966–2009 and 1999–2009, in line with the 5.2% change for the region (Appendix IV).

Fall. An early fall migrant, a few southbound birds are detected even in late July or shortly thereafter: Lebanon 23 Jul 1995 (P.D. Hunt), Wilmot 31 Jul 1966 (K.C. Elkins), Wolfeboro 1 Aug 1979 (D.L. Raddin), and Antrim 5 Aug 1960 (S. Howard *et al.*). Peak counts have occurred 23 August to 13 September: 18 at New Hampton 23 Aug 1951 (V.H. Hebert), 40 at New Hampton 23 Aug 1962 (V.H. Hebert), 30+ at Whitefield 13 Sep 1976 (R.J. Bradley), and 37 at New Hampton 16 Sep 1956 (R.W. Smart); these numbers followed Eastern Spruce Budworm outbreaks in some parts of the species' range if not in New Hampshire. Other than Eastern Spruce Budworm outbreak years in 1975–2006, peak daily counts were 2–3 birds. One was at Star Island 18 Sep 1999 (R.W. Suomala *et al.*) and 22 Aug 1979 (J. Ginaven). Most are usually gone by mid-October, and extreme late records are Epsom 8 Nov 1984 (B.R. Ring *et al.*), Holderness 14 Nov 1971 (V.H. and R.C. Hebert), and 1 at Manchester 21 Nov 2010 (M. Iliff) and 23 Nov 2010 (S.R. Mirick; photo).

Orange-crowned Warbler *Oreothlypis celata*

Status. A rare spring transient, an uncommon but nearly annual fall transient, and a rare winter visitor.

Early reports to 1950. The first record and specimen for the state was taken at Hollis 16 May 1876 (W.H. Fox) as reported by Fox (1876), Brewster (1876c), and Stearns (1887); it ended up in the Dwight collection and is now AMNH #380239. A second bird was collected on the Isles of Shoals 9 Sep 1877 by O. E. Bangs and attributed to New Hampshire though the precise island is not known; the specimen cannot now be found. A third specimen was taken by W. Brewster at Cambridge, New Hampshire, near Lake Umbagog 26 Sep 1890 which is now lost, and Brewster saw 2 birds there 30 Aug 1895 and 2 more 2 Sep 1898 (Griscom 1938). Five sight records by very experienced observers were submitted to RNEB 1936–1949: 1 at Monroe 5 Sep 1945 (I.F. Hunt), 1 at Monroe 28 and 29 Sep 1946 (I.F. Hunt, R.B. Emery), 1 at New Hampton 29 Sep 1946 (V.H. Hebert), 1 in Hanover on the very early date of 17 Apr 1949 (D.E. Wade, L. Viereck), and 1 at Sandwich 24 Sep 1949 (T. Richards).

This species' breeding range lies mostly west of New England, and it was not recorded for ME before 1949 (Palmer 1949) but more recently has been found at ME coastal locations (Pierson *et al.* 1996). It is considered rare in VT (Murin and Pfeiffer 2002). In MA, it has markedly increased since 1890, especially as a fall transient, and now occurs annually (Wright 1917, Griscom and Snyder 1955, BO database 2010).

1950 to present. Rare in spring, uncommon but nearly annual in fall, usually at or near the coast; rare in winter.

Spring. There are 16 known records between extreme dates of 25 Apr 2009 at Concord (R.S. Ridgely) and 25 Apr 2011 at Salem (S.R. Mirick) to 1 at Concord 31 May 1973 (H.B. Miller). Ten of these were in the 1950–1975 period and only 5 since. An unusual northerly inland record is 1 at Whitefield 7 May 1997 (R.A. Quinn *et al.*).

Fall and winter. Found most often in late fall, usually near the coast. Fall records range from 23 Aug 1962 at New Hampton (V.H. Hebert) through December. Maxima found in a season were 5 in 1998, 6 in 2007, 11 in 2008, and 9 in 2009. Published records 1950–2010 show 6 reports in August, 27 in September, 46 in October, 19 in November, and 12 in December (see Quinn 2010), including at least 4 times on the Coastal CBC and once on the CBC at Star Island. At Star Island, 1 was found 4 Oct 2009 (B. Griffith, L. Kras) and 1 was found dead 21 Oct 1973 by T. Michie (MCZ specimen #330036). The only known winter records are at Derry 29 Dec 1997 into Feb 1998 (R. Yanuszewski; video), 1 at New London 13 Feb 2010 (J. Prew; photos), 1 that appeared sporadically at Merrimack 14 Dec 2005 to 28 Feb and 10 Mar 2006 (R. Carr), 1 at Exeter 24 Jan 2011 (B. and A. Campbell *et al.*),

and 1 at North Sandwich 7 Dec 2010 to 20 Jan 2011 (R.S. and P. Ridgely; photo).

Taxonomic note. The subspecies most likely to be found in New Hampshire is nominate *O. c. celata* which breeds as far east as eastern Quebec and southern Labrador. However, the bird found at New London 13 Feb 2010 was a very bright individual which, upon close examination of the photographs, appeared likely to be of 1 of the western races, possibly *O. c. lutescens* or more probably *O. c. orestera*.

Nashville Warbler *Oreothlypis ruficapilla*

Status. Fairly common spring migrant, less common fall migrant and a broadly-distributed summer resident in shrubland habitat, regenerating forests, and spruce bogs. It appears to be slowly declining as a breeder as its preferred habitat matures into forest.

Early reports to 1950. Considered an extremely rare species 1810–1820 (Baird *et al.* 1874); as young forest replaced overgrown fields during the 1880s, it increased significantly. Forbush (1929) relates that it was rare in southern New England in the early 1800s but became common there by about the 1840s. By 1890 it had become a common seasonal migrant and summer resident in much of New Hampshire including the Lake Umbagog region (Maynard 1871, Griscom 1938); the southwestern part of the state and Mt. Monadnock area (Allen 1903, Thayer 1912); the Webster area (Goodhue 1877a); and at Franconia, Gorham, and the Squam Lake area (Faxon and Allen 1888). In the Jefferson region Wright (1911) found it a common summer resident up to 4500 feet on the mountains, reporting up to 20 singing males between Jefferson and Bretton Woods in 1 day and a late date of 4 Oct 1904. Marble (1907) only recorded it as a migrant at Crawford Notch in September.

South of the White Mountains, Dearborn (1898, 1903) thought it a common migrant but only a scarce breeder in Belknap and Merrimack Counties and near Durham, and Howe (1901–1903) found it only locally common around Bridgewater. The Dwight collection contained 8 specimens from Hollis taken 11 May to 15 July 1876–1886 (AMNH #380415–380422), 1 from Lancaster taken 12 Jun 1911 (AMNH #380423), and 1 taken at Campton Village 20 Jul 1885 (AMNH #380424). At Concord, White (1924b, 1937) described it as a fairly common migrant but scarce as a summer resident and breeder; his extreme dates there were 5 May 1919 to 1 Sep 1927. Lord's (1918) earliest spring arrival date at Hanover was 3 May. At Lake Umbagog 1930–1936, G. L. Perry found that it had increased significantly from Brewster's time (1871–1909) at the Lake (Griscom 1938).

Reports submitted to RNEB 1936–1949 include the earliest spring arrival of 2 May at Harrisville in 1941 (J.M.

Abbott) and at Ossipee in 1944 (E.E. Pratt), and earliest so far north as Colebrook on 3 May 1949 (D.W. Brainard). Usual first arrival was 5–13 May. In fall, peak migration period was the middle 2 weeks of September, and the latest fall reports were 13 Oct in 1947 at Andover (K.C. Elkins) and in 1949 at New Hampton (V.H. Hebert).

In the 1880s to about 1900, this species benefitted from forest regeneration. However, as second growth matured and shaded out this species' preferred bushy habitat, the distribution of this species in the state shifted to areas where the vegetation was earlier in the succession pattern. Overall, the species became less common as its preferred habitat type became less common.

1950 to present. Numbers have fluctuated but a modest decline appears to have occurred.

Spring. The earliest known spring arrivals are Moultonboro 18 Apr 1977 (I.A. Behr) and Bedford 18 Apr 1987 (L. Kennard); mean first arrival date is 29 April. General arrival is typically 4–11 May. Peak spring counts occurred in the 1960s: 75 at the coast 10 May 1965 (R.W. Smart), 35 at the coast 14 May 1961 (R.W. Smart, V.H. Hebert *et al.*), and 20 at New Hampton 4 May 1960 (V.H. Hebert *et al.*). More recently, high counts of up to 20 birds are more usual: 19 at Enfield 15 May 1998 (P.D. Hunt) and 25 at Jefferson 27 May 1997 (R.A. Quinn). Ninety percent of first arrivals since 1950 tend to appear in the lower part of the 2 major river valleys or rarely as far north as Landaff and Columbia rather than at the coast (10%). Most birds have moved through the southern part of the state by the first week of June. Late spring dates include birds at Seavey Island 3 Jun 2003 (M. Barney) and 2 on 7 Jun 2002 (K. Bixler, S. Eliot).

Summer and breeding. Birds breed from sea level to timberline so they might be found statewide in appropriate habitat. *Atlas of Breeding Birds* data 1981–1986 include records in every priority atlas block in Coos County but more scattered records in the Lakes Region and south, probably because of more urbanization and mature forests (S. Smith *in Foss* 1994). Highest summer counts are from Coos County, specifically Pittsburg and Jefferson, where up to 50 birds in a day have been reported depending on the size of the area covered. Ridgely (1977) found it a fairly common but local breeder near Squam Lake, Allison and Allison (1979) described it as rather rare in the Dublin region except up on Mt. Monadnock, and Cohn-Haft (1995) reported it as still a common breeder at the Second College Grant. New Hampshire BBS population trend data show an average of about a 2.8% decline per year for both 1966–2009 and 1999–2009 (Appendix IV); since 1994 its breeding population has been declining (Hunt 2009b).

Fall. The earliest southbound migrants are suspected in late July but cannot be distinguished with certainty from

local residents. Migration peaks in late August to early September. Fall counts typically range 1–10 per day with a high count of 25 at Hanover 6 Sep 1956 (H.C. McDade *et al.*). Small numbers are regularly found into late September, most birds are gone by the second week of October, and extreme late dates are Enfield 24 Nov 1996 (P.D. Hunt) and Manchester 21 Nov 1976 (W.A. Yates). A single bird was still at 4300 feet elevation on Mt. Madison 17 Sep 1963 (H.C. McDade).

Winter. One was found on the Coastal CBC 19 Dec 1987 (*fide* A.C. Borrer).

Taxonomic note. The local breeding form in the state is nominate *O. r. ruficapilla*. Very late fall records of Nashville Warbler have occasionally been suspected of being the western race *O. r. ridgwayi*, sometimes known as “Calaveras Warbler,” but no specimens yet exist for any New England state or elsewhere east of the Rocky Mountains. A bird found at Northfield 29 Oct 2000 (P.D. Hunt) has been accepted by the NHRBC as this race based on that form's documented habit of wagging its tail and other plumage differences.

Connecticut Warbler *Oporornis agilis*

Status. Rare fall migrant; accidental in spring.

Early reports to 1950. The first record for the state appears to be that of Goodhue (1877a) who observed 1 at Webster in May 1874; his other records there were 1 caught by a cat 1 Oct 1900, 1 seen 6 Oct 1901, and 3 seen 25 Sep 1901. H. A. Purdie collected 1 at Rye Beach 20 Sep 1875 (MCZ #248945). Chadbourne (1885) reported 1 collected on Mt. Baldcap in the town of Success at 800 feet elevation 14 Sep 1884 (MCZ #324369). Allen (1903) mentions 1 seen by G. H. Thayer at Dublin 3 Oct 1899 and 1 shot by R. H. Howe, Jr., in Carter Notch at about 2000 feet elevation 6 Sep 1899 (MCZ #296790). Brewster saw only 1 at Lake Umbagog on 30 Sep 1890 but did not specify in which state (Griscom 1938). Marble found 1 at Crawford Notch 22 Sep 1908. In the Jefferson region Wright (1911) had several records: 1 on 6 Sep 1901 and 3 others later that fall, 5 seen 25 Sep 1903, 5 seen 21–27 Sep 1909, 1 seen 6 Oct 1908, 1 seen 14 Sep 1908 (Mrs. Bridge), and 1 in Randolph 14 Sep 1910 (Mrs. Bridge). Dearborn (1903) called it rare near Durham and mentioned records on 23 September and 11 October without specifying the year or observer. Chapman (1907) cited G. H. Thayer that “two or three” had been seen in spring near Mt. Monadnock, and Thayer (1912) said it was rare in the Dublin area by the time of writing but had been commoner in earlier years. Bagg and Eliot (1937) relate several reports by L. O. Shelley at East Westmoreland: 10 May 1927, a male carrying food in Jul 1929, 1 seen 8 May 1930, a female carrying food in Jul 1930, a singing male seen 25 Jun 1932; though breeding seems highly improb-

able the data are intriguing. White (1937) reported 1 at Concord 18 Sep 1936 (D.B. Rodd).

Nine reports were submitted to RNEB in 1936–1949, all in fall. Extreme dates were 26 Aug 1944 at Holderness (Henderson) to 27 Sep 1944 at Andover (K.C. Elkins).

In summary, Brewster (1906) considered this a common fall migrant, occasionally very common, in eastern MA in the late 1800s, especially in 1870, 1871, and 1881, but unknown in spring. The little evidence available suggests it probably also was a common fall migrant and very rare spring migrant in New Hampshire, especially in the Connecticut River valley, from the 1870s perhaps through the 1920s. Extreme dates up to 1950 are mid-May in spring and 26 August to 11 October in fall. After the 1920s it declined very sharply for unknown reasons.

1950 to present. Very rare in spring, rare in fall.

Spring. One report at Manchester 14 and 15 May 1980 (M.T. Martin), 1 at Thornton 7 Jul 1985 (P. Yawkey), Loudon 5 May 1989 (B. Baird), and Campton 22 May 1990 (J. Fisher). A published report of possibly 2 or more heard singing and glimpsed at Success in the late 1980s was never confirmed.

Fall. Earliest known arrivals are Hanover 23 Aug 1957 (E.H. Sherrard *et al.*) and New Hampton 25 Aug 1960 (R.W. Smart). Peak period is the last 3 weeks of September with a mean of 18 September. Very late dates include 1 banded at Rye 10 Oct 1969 (E.W. Phinney), 1 at Strafford 10 Oct 2010 (B. Griffith, L. Kras, J. Lambert), and 1 at East Kingston 13 Oct 2005 (D.W. Finch). Reports are slightly more frequent from inland locations than along the coast. This follows a pattern noted in MA where *Oporornis* warblers seen mid-August to mid-September in coastal thickets are usually Mourning Warblers whereas a somewhat higher percentage of Connecticut Warblers occur between mid-September and early October at more inland locations (Veit and Petersen 1993). Usual reports are of single birds, but it possibly occurs more frequently than supposed due to its secretive habits (Pittocelli *et al.* 1997): using tape playback at Rye from 11–29 Sep 1972 a minimum of 12 different birds were observed (J.E. Cavanagh).

MacGillivray's Warbler *Geothlypis tolmiei*

Status. Vagrant from the west; 1 report. One seen 1 Oct 2005 at Lake Shore Park in Gilford (D. and J. Coskren). Considered hypothetical for lack of a third observer. A *Geothlypis* sp. seen at Bristol 12 Nov 1976 (V.S. Wright), a date probably too late for any other *Geothlypis* except Common Yellowthroat, possibly pertains to this species. At least 12 records for MA (Veit and Petersen 1993, BO database 2010) and 3 records for ME (P.D. Vickery pers. comm.).

Mourning Warbler *Geothlypis philadelphia*

Status. An uncommon spring and fall migrant and an uncommon to locally common summer resident and breeder; status apparently little changed overall for a century or more.

Early reports to 1950. Some early ornithologists found it locally common north of the White Mountains (Maynard 1871, Allen 1903). Brewster found it a common summer resident in the Lake Umbagog region in 1871–1909, noting that it seldom arrived before 1 June and that it usually left by mid-July (Griscom 1938). South of the White Mountains, early writers thought it rare. Goodhue (1877a) did not mention it for Webster, but later (1922) reported a single sighting of a female there 15 Jun 1880 and noted reports by others at Manchester and Franklin. Dearborn (1898) had no records for Belknap and Merrimack Counties, Howe (1901–1903) had none for the Bridgewater area, and Marble (1907) did not find it at Crawford Notch. Dearborn (1903) had but 1 record near Durham, 1 at Exeter in the first week of Jun 1900 (M. Calef). Thayer (1912) considered it very rare in the Dublin area, and Lord (1918) had only 1 report from Hanover, 1 seen 25 May 1915. In the Jefferson region Wright (1911) said it was a fairly common summer resident up to 2500 feet in brushy areas that had been recently logged; his latest fall record there was 13 Sep 1903. Bagg and Eliot (1937) mention 1 at East Westmoreland 10 May 1926 (L.O. Shelley). White (1924b, 1937) had but 1 report at Concord 27 May 1920 (G.P. Milne).

Reports submitted to RNEB 1936–1949 show it to be a regular if uncommon migrant south of the mountains. Earliest report for the Connecticut River valley is 1 at Canaan 12 May 1940 (A. McAlister, R. Ricard) and for the Merrimack River valley is 1 at Concord 17 May 1939 (F.B. White). Peak spring migration was the first 2 weeks of June, and the last transients had gone through by late June. The few summer reports include Franconia Notch 2 Jul 1938 (W. Cottrell *et al.*), Zealand River in late Jun 1945 (S.K. Harris), a pair at Whitefield in Jul 1945 (Erickson), and probable nonbreeders south of the usual breeding areas at Andover 5 Jul 1938 (K.C. Elkins) and New Hampton to 16 Jul 1945 (V.H. Hebert). The first southbound birds were noted by mid-August and peak migration period was the last week of August. Latest record for the Merrimack River valley was 3 Sep 1944 at New Hampton (V.H. Hebert) and latest for the Connecticut River valley was 21 Sep 1949 at Monroe (I.F. Hunt).

1950 to present. Some variation in local populations but overall little changed.

Spring. Earliest known spring migration dates include 11 May 1987 at Hillsborough (R.A. Sprague), Andover 12 May 1958 (Graves), and Errol 14 May 1993 (C.J. Martin). Typical spring arrival is in the last week of May and the first week of June. Late spring migrants include 2 banded

at Star Island 8 Jun 2000 (R.W. Suomala), 1 at Charlestown 12 Jun 1960 (R. Stickney), 1 at Seavey Island 4 Jun in both 2001 and 2006 (D. Hayward *et al.*), and 2 there 17 Jun 1998 (J. Ellis, D. Hayward). Most early dates are in the Connecticut River valley with some in the Merrimack valley and a few at breeding areas. Migrant reports in late May–early June from the coast are often females, usually single birds. Reports north of the White Mountains in early June could be either resident or migrant birds. One at Rumney 21 Jun 2005 (J. and J. Williams) and a singing male in Epsom 25 Jun 2000 (P. Newbern) were unusually far south so late in spring.

Summer and breeding. Breeding season is from early June to mid-August with fledged young through July (Foss 1994). The *Atlas of Breeding Birds* project in 1981–1986 found it regularly in priority atlas blocks in the northern part of the state, sparingly in the White Mountains, and occasionally farther south in high elevation areas (Foss 1994). Recent breeding has been documented at elevations of 1000–2000 feet in the White Mountains and at higher levels south of there. It prefers thickets and bramble tangles in recently clear-cut or burned forest areas. After several years it leaves these areas as the forest returns, so specific breeding areas change over time (Bent 1953, Cox 1960). In the 1950s it was common near Pittsburg in recently-logged areas: 30 birds 20–27 Jun 1954 (M. Halberg *et al.*), 25 on 26–28 Jun 1959 (ASNH field trip), 30 birds there in Jul 1960 (R.W. Smart).

In the next few years the numbers found in that area declined. Timber salvage operations after the Eastern Spruce Budworm outbreak in the late 1970s and early 1980s created large acreages of suitable habitat for this species, and local populations in parts of Coos County rose significantly in 1983 and 1984, only to begin declining by 1985 (NHBR 13 [2]: 33; V.H. Hebert and K.C. Elkins *in* Foss 1994). Highest counts since then include 24 in Randolph 11 Jul 2004 (D. Govatski) and 20 in the Pittsburg area 14–19 Jun 2005 (v.o.). Since 1950, possible breeding was reported from the Squam Lake region (Ridgely 1977), Mt. Sunapee 17 Jul 1954 (T. Richards), 2 pairs at Grantham 1978 (V.H. Hebert *et al.*), Sandwich Range and in the Ossipee Mountains (R. Van de Poll), and commonly in the Second College Grant (Cohn-Haft 1995). Breeding season records have come from as far south as Plainfield, Walpole, New London, Tucker Mountain in Hill, Enfield, and from Bly Hill in Newbury (V.H. Hebert and K.C. Elkins *in* Foss 1994). New Hampshire BBS population trend data show a puzzling small decline (1.4% per year) in 1966–2009 and then an increase of 5.0% per year in 1999–2009 (Appendix IV). A successful breeding pair was at North Sandwich 28 May to 1 Aug 2006 (R.S. Ridgely) at only 800 feet elevation.

Fall. Earliest southbound migrants are found south of the White Mountains from the third week of August: 1

at Star Island 18 Aug 1999 (R.W. Suomala) and 1 at Concord 19 Aug 2007 (P.D. Hunt). Peak migration period is the last week of August and the first week of September. More first arrivals south of the mountains appear in the Connecticut than in the Merrimack River valley. Latest known report for the Merrimack River valley is Bristol on 9 Oct 1976 (V.S. Wright), for the Connecticut River valley is 1 at Keene on 21 Oct 1955 (S.H. Smith), and for the coastal region is 2 Oct 2006 (T. Bronson, D. Hubbard). Latest known for Star Island is 1 banded 24 Sep 2000 (R.W. Suomala).

Kentucky Warbler *Geothlypis formosa*

Status. Very rare migrant from the south. Found more often in spring than in fall. Occurs annually both spring and fall in MA (Veit and Petersen 1993, BO database 2010), 7 accepted records for VT (C.C. Rimmer pers. comm.), and over 30 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Early records to 1950. Two sight records: 1 at East Westmoreland 30 Aug 1930 (Shelley 1931b) and 1 at Monroe 2 Jun 1949 (R.B. Emery, I.F. Hunt; RNEB).

1950 to present. Seventeen records 1950–2009, presumably due to migration overshoot in spring and postbreeding dispersal in fall. See the general overview of this species' occurrence 1949–2006 by Fox (2006b).

Spring. Extreme dates of 13 records range from Pawtuckaway State Park 12 May 1984 (D.W. Finch, D.J. Abbott) to Kensington 1–5 Jun 2007 (G.W. Gavutis, Jr., *et al.*) with a mean date of 18 May. Spring reports from the southeastern part of the state are from Portsmouth (1), Durham (1), Pawtuckaway State Park (2), Bedford (1), and Rye (3). Merrimack River valley reports are from Concord (1), Penacook (1), and Meredith (1). One Connecticut River valley report is from Lebanon 14 May 2000 (P.D. Hunt). An adult male found dead at Rye 29 May 1969 (F.L. Higginson) was deposited at PEM, Salem, but later transferred to UNH (specimen #4168A).

Fall. Four fall records range from 13 to 30 September and include Hampton 13 Sep 1954 (P.E. Keenan), Deerfield 18 Sep 1971 (E.W. Phinney), Hampton 30 Sep 1962 (V.H. Hebert *et al.*), and 1 banded at Star Island 6 Sep 1998 (R.W. Suomala).

Common Yellowthroat *Geothlypis trichas*

Status. Common to very common breeding species and migrant rarely remaining into winter. One of the most common and widespread warblers in the state.

Early reports to 1950. All writers in the 1800s and early 1900s considered it a common to very common seasonal migrant and breeder from the White Mountains southward (Coues 1868, Goodhue 1877a, Dearborn 1898,

Howe 1901–1903, Allen 1903, Dearborn 1903 and 1905, Wright 1911, Thayer 1912, White 1924 and 1937). The Dwight collection contained 10 specimens taken at Hollis from 9 May to 29 August 1875–1887 (AMNH #384070–384079) and 1 taken at Wolfeboro 12 Sep 1879 (AMNH #384080). In the Jefferson region Wright (1911) recorded 37 singing males between Lancaster and Riverton 2 Jul 1906.

In the White Mountains and northward, Maynard (1871) thought it “not very common at Umbagog in June,” and Brewster indicated that it was uncommon at the start of his time there in 1871 but had increased noticeably by 1896–1900 (Griscom 1938). Marble (1907) reported it as uncommon at Crawford Notch in summer. White’s (1937) extreme dates at Concord were 4 May 1926 to 15 Oct 1936 (H.A. Laughlin, Jr.). Howe (1901–1903) recorded 1 above treeline on Mt. Cardigan 26 Jul 1901.

Reports submitted to RNEB in 1936–1949 provide an extreme early spring arrival of 9 May 1949 at New Hampton (V.H. Hebert) and 1 as far north as Colebrook 10 May 1949 (D.W. Brainard). Usual first arrival was in the second week of May. In fall, it often remained common into late September; latest fall record for the Connecticut River valley was 22 Oct 1939 at West Lebanon (R.L. Weaver), for the Merrimack River valley was 26 Oct 1937 at Manchester (E.J. Goellner), and for the coast was 19 Nov 1936 at Rye (E.J. Goellner *et al.*). Allan (1931) reported 1 for the Isles of Shoals on an unnamed island 12 May 1930.

1950 to present. Its breeding population appears to have plateaued during this period and is listed as declining since about 1990 (Hunt 2009b).

Spring. Extreme early arrival dates are 1 at Hampton Beach 18 Apr 1964 (K.C. Elkins *et al.*) and at Hooksett 20 Apr 1991 (D. Maxwell), and a surprisingly early arrival in the northern Connecticut River valley was 1 at Columbia 1 May 2004 (D. Killam). Mean first arrival date is 4 May. Peak migration period is typically the third week of May when counts in the 20–40 range have been made. Some high counts include 53 at Concord 21 May 2006 (R.A. Woodward), 43 at White Island 17 May 2002 (D. Hayward *et al.*), 25 mostly females at Star Island 24 May 1964 (ASNH field trip), 20 banded at Rye 26 May 1971 (E.W. Phinney), and 25 at White Island 30 May 1968 (ASNH field trip). Extreme dates for the New Hampshire Isles of Shoals are from 1 at White Island 5 May 2006 (D. and M. Hayward) to singles there 17 Jun 1998 and 1 on 1 Jul 1998 (both J. Ellis, D. Hayward) though the latter reports could have been wanderers from nearby Appledore Island, ME, where it breeds.

Summer and breeding. Ridgely (1977) called it a common breeder and migrant in the Squam Lake area as did Allison and Allison (1979) near Dublin. The *Atlas of Breeding Birds* project 1981–1986 found it breeding in

98% of all priority atlas blocks (Foss 1994). National BBS data showed an increase in the eastern United States with concentrations in New Hampshire and nearby states 1966–1979 (Robbins *et al.* 1986). New Hampshire BBS population trend data show a small 1.0% decline per year in 1966–2009 and 1999–2009 (Appendix IV); it continues to be 1 of the most common breeders but has changed very little in total numbers (NHBR 13 [2]: 33). Peak roadside counts include 51 in Littleton 8 Jun 1990 (R.J. Bradley) and 49 in Pittsburg 25–26 Jun 2004 (E.B. Nielsen). Highest elevation recorded is a singing male apparently on territory on Caps Ridge Trail, White Mountains National Forest, at 3700 feet on 1 Jul 2011 (G.C. and A.E. Robbins). Cohn-Haft (1995) called it an abundant breeder in the Second College Grant.

Fall. The first southbound birds are suspected by early August, but peak counts in late August may represent a mix of migrants and local breeding birds. Peak fall migration period is the middle 2 weeks of September; examples include 42 at Jefferson 19 Sep 1990 (R.J. Bradley), 27 banded on 12 Sep 1999 and 26 banded on 13 Sep 2000 at Star Island (both R.W. Suomala *et al.*). All birds are usually gone by the end of October. Latest fall record at Star Island is 2 on 16 Nov 1969 (R.W. Smart *et al.*).

Winter. It has been reported from December into January at the coast, often on CBCs: 26 Dec 1953 (CBC), 3 at Hampton 14 Dec 1969 (R.W. Smart), Seabrook 25 Dec 1975 (L.G. Phinney), 20 Dec 1975 (D.J. Abbott *et al.*), in 1983, 3 other times in the 1980s and at least 5 times in the 1990s. Latest reports were 1 inland at Hinsdale 8 Jan 2000 (S. Schmidt), at Rye 9 Jan 1972 (J.E. Cavanagh), and 1 at Hampton 14 Jan 2007 (S.R. and J. Mirick).

Hooded Warbler *Setophaga citrina*

Status. A southern species found rarely in both spring and in fall, primarily in southeastern New Hampshire. About half the state’s records have occurred during 1995–2003, a period in which it has become more common as a breeding species in southern New England. Never found throughout the entire breeding season into summer.

Early reports to 1950. The first known state record was an observation (Mrs. H. Rice, Mrs. H. Hillman) at North Sandwich 22 Aug 1921 (Goodhue 1922, Baggett and Eliot 1937). A report by Abbott (1906) was discounted by Goodhue (1922).

1950 to present. There are 19 accepted records 1950–2010, 15 of which have been in spring.

Spring. Extreme dates range from Pawtuckaway State Park in Nottingham on 28 Apr 1995 (G. Mitchell) to 1 at Durham 6–19 Jun 1998 (C.A. Federer, S.R. Mirick *et al.*). Most early birds are thought to be the result of migratory overshoot in spring or the product of storms from the

south. There are 3 reports in April, 9 in May, and 4 in June. Six reports are from the coastal region, 2 from the lower Connecticut River valley (Surry 2008, Keene 2009), the northernmost at Squam Lake 25 May 1974 (Ridgely 1977) and Holderness 7 Jun 2008 (S.R. and J. Mirick). Two reports from the Isles of Shoals: 1 at Star Island 24 May 1964 (K.C. Elkins *et al.*) and White and Seavey Islands 19 May 2003 (M. Barney).

Fall. Records at this season are believed to be due to post-breeding dispersal or reverse migration. In addition to the 1921 report, records include 1 at Washington 3 Aug 1961 (G. Allen); at Star Island 24 Sep 2000 (R.W. and M. Suomala *et al.*); at Portsmouth 25 Oct 1965 (E.W. Phinney); a female at Hanover 21 Nov 2000 (J. Wright); 1 found rather north at Bristol 19 Sep 2010 (S.A. Fogleman); 1 at Odiorne Point, Rye, 9 Oct 2011 (S.R. Mirick *et al.*); and a female found at Seabrook 27 Nov 2010 (S.R. and J. Mirick; photo) which was last seen on 9 Dec 2010 (D.J. Abbott, D.W. Finch).

American Redstart *Setophaga ruticilla*

Status. A common spring and fall migrant and common breeder nearly statewide though it has declined noticeably as a breeder since the 1970s.

Early reports to 1950. The “Little Hang-Bird, *Parus pendulinus*?” of Belknap (1792) very possibly belongs here. Considered as common to abundant at Webster (Goodhue 1877a), in Belknap and Merrimack Counties (Dearborn 1898), near Bridgewater (Allen 1889, Howe 1901–1903), virtually statewide (Allen 1903), at Crawford Notch (Marble 1907), in the Lake Umbagog region 1871–1909 (Griscom 1938), in the Durham area (Dearborn 1903), and at Dublin (Thayer 1912). The Dwight collection contained 5 specimens taken at Hollis between 9 May and 22 June in the years 1875–1887 (AMNH #384988–384992). Wright (1911) in the Jefferson region thought it a very common spring and fall migrant and “an abundant summer resident in all deciduous and mixed woods” up to at least 3000 feet or higher; he regularly counted 35–40 in a day in his area in June, and his latest fall record was 8 Oct 1902. Lord’s (1918) earliest arrival at Hanover was 7 May and his six-year average was 11 May. At Concord White (1924b, 1937) found it a very common seasonal migrant and summer resident; his earliest spring arrival date was 6 May and average was 10 May; he recorded at least 30 on 24 May 1920 and his latest record in fall was 29 Sep 1936.

Reports submitted to RNEB 1936–1949 show it to be a regular seasonal migrant. Earliest report in spring was 5 May 1949 at Monroe (R.B. Emery) and usual first arrival was in the 8–15 May period. In fall, most reports fell between 3 and 24 September. Latest fall records were 30 Sep 1945 at Andover (K.C. Elkins) in the Connecticut River drainage and 9 Oct 1949 at New Hampton (V.H. Hebert)

in the Merrimack River drainage.

1950 to present. Though still common in hardwood and mixed forest, its breeding population has been declining since the 1970s (Hunt 2009b).

Spring. Earliest known arrivals are at Gorham 20 Apr 1998 (M. Santy), Manchester 30 Apr 1985 (M.T. Martin), and Kensington 30 Apr 1976 (R.S. Aaronian). Mean first arrival date is 6 May. The majority of first arrivals were in the Merrimack valley and in the southern third of the state. Peak migration period is the middle 2 weeks of May. Normal daily counts are 1–10, and extreme high interior counts which probably included local territorial pairs were 55 at Nottingham 18 May 1998 (A. and B. Delorey) and 40 there on 22 May 1994 (R.A. Quinn). Peak counts at the coast were 50+ at Seabrook 28 May 1970 (R.W. Smart), 33 at Rye 24 May 1997 (A. and B. Delorey), and 18 banded at Star Island 3 Jun 2000 (R.W. Suomala). Latest known migrants were 1 at White and Seavey Islands 13 Jun 2006, 13 Jun 1999, and 9 Jun 2007 (all D. Hayward *et al.*); 5 on Star Island 5 Jun 2008 (E.A. Masterson); and 20 miles at sea while on the *Viking Queen* 8 Jun 1980 (T. Richards).

Summer and breeding. Still common but slightly declining at a rate of 3.3% per year 1980–1995 (Sherry and Holmes 1997) as its preferred understory habitat has become scarcer while hardwood forests have matured statewide since 1950. The *Atlas of Breeding Birds* project 1981–1986 found it nesting in 98% of priority atlas blocks (T.W. Sherry and R.T. Holmes *in* Foss 1994). Regional BBS data showed that New Hampshire had a high density population 1964–1986 but annual numbers began to shrink on New Hampshire BBS routes beginning in the mid-1980s and have continued to do so since. New Hampshire BBS population trend data show a 3.3% decline per year in both 1966–2009 and 1999–2009 (Appendix IV). Early high counts include 260 at Umbagog in summer 1959 (V.H. and R.C. Hebert). Seldom found above 3000 feet elevation but the highest elevation recorded is 1 at 4000 feet on Mt Washington in 1970 (T. Richards). A common to abundant summer resident in the Squam Lake area (Ridgely 1977) and near Dublin (Allison and Allison 1979), and an abundant breeder at the Second College Grant (Cohn-Haft 1995), but is thought to have declined to only fairly common in all 3 areas by 2009.

Fall to early winter. A few southbound migrants are noted in early August such as 25 “migrating” at New Hampton 8 Aug 1954 (V.H. Hebert). Numbers of transients observed are generally smaller than in spring but peak in the last week of August and the first week of September. Examples include 51 banded at Center Harbor 19 Aug to 19 Sep 1976 (J.P. Merrill), 10+ at Star Island 1 Sep 1974 (R.S. Holt), and 100 at the coast 2 Sep 1967 (R.W. Smart). Latest known at the Isles of Shoals is 1 at

Star Island 5 Oct 2007 (E.A. Masterson). Mean last sighting date since 1950 is 7 October. Most such reports come from the coast or the southern Merrimack River valley, and all birds are usually gone by mid-October. The latest known fall reports are at East Kingston 13 Nov 1979 (D.W. Finch), at Exeter 19 Nov 1956 (M. Hodges), 1 at Newington 20 Nov 1994 (M. and R.W. Suomala *et al.*), and Concord 7 Dec 2009 (J. Broyles).

Kirtland's Warbler *Setophaga kirtlandii*

Status. Vagrant from the upper Midwest, now its only breeding locality. Hypothetical for lack of a precise date and a third experienced observer. A report of 2 singing males seen near Lancaster, possibly in an area of Jack Pines *Pinus banksiana*, as reported in a letter dated 20 Oct 1920 of an observation several years before by E. Arnold: found "towards the end of May...The late Fred Spaulding was with me but as we had no gun we did not collect them" (Landry 1978). Edward Arnold had had much previous field experience with this species in Michigan by this time, and it was he who discovered the third nest and eggs of that species ever found in 1904 (Wood 1950). Spaulding was a knowledgeable and experienced observer who lived in the Lancaster area (see the Bibliography and Wright 1911). As was traditional at the time, sight observations of extreme rarities were not published. Garvey and Iliff (2011) reviewed the only accepted record for MA which was reported by 3 observers 26 May 1916, in the same month and about the same year as the New Hampshire report. They note that the population of this species was much larger then than it is now and that its breeding range extended as far east as Ontario. There are also extralimital records of this species as far east as Virginia (Larner 1979: 2 in 1887, 1 in 1974, all in fall), West Virginia (Hall 1983: 1937, 1943, early 1940s, 1974; 3 were in May), Pennsylvania (McWilliams and Brauning 2000: 1971, 1994, 1996, 1997; 2 were in May), and on 2 Jun 2008 in ME (ME-BRC website). The NHRBC has not reviewed the New Hampshire report.

Cape May Warbler *Setophaga tigrina*

Status. Populations of this species have fluctuated widely historically, likely due to periodic Eastern Spruce Budworm outbreaks. It is now a rare to uncommon migrant and a rare nesting species in the White Mountains and northward.

Early reports to 1950. New Hampshire is at the southern edge of this species' breeding range, so early reports indicated that its numbers were variable and that it was rare much of the time. Coues (1868) thought it extremely scarce in Coos County, but Maynard (1871) called it formerly common in the Errol-Lake Umbagog region. Brewster said it was abundant at Lake Umbagog 1871–

1875, became uncommon and then totally disappeared by 1879, only to become uncommon again by 1896. Chapman (1907) found it at the lake but could not prove breeding there. One was seen in Franconia 22 May–3 Jun 1899 (Torrey 1900), but Marble (1907) never found it at Crawford Notch. Wright (1911) thought it a rather rare fall migrant in the Jefferson region, recording only 1–2 per year between extreme fall dates of 23 August to 16 September. At Lake Umbagog in the 1930–1936 breeding seasons, G. L. Perry found it breeding there uncommonly (Griscom 1938).

South of the White Mountains, Goodhue (1877a, 1922) had only 2 records at Webster on 22 May 1916 and 30 Jun 1917, Dearborn (1898, 1903) never saw 1 in Belknap or Merrimack Counties or in the Durham area, and Allen (1903) thought it rare in the central and southern parts of the state. Several were seen at Manchester in a major warbler flight in May 1900 (Allen 1903), Thayer (1912) only recorded it twice near Dublin, and White (1924b, 1937) only had reports at Concord on 15 May 1915 and 2 Oct 1922 other than a few birds in a great migration wave in May 1917.

Reports submitted to RNEB 1936–1949 show it to be regularly reported in spring after 1943, earliest record being 10 May 1949 at Bow (G.P. Baker *et al.*), usual arrival in the middle 2 weeks of May, 1 as far north as Colebrook 20 May 1948 (D.W. Brainard), and latest migrant at Hanover 31 May 1945 (W.G. Goodhue). It was also reported more often in fall from 1945 to 1949, first southbound bird noted at New Hampton 21 Aug 1948 (V.H. Hebert), peak fall migration period the first and second weeks of September, and latest fall record being 1 at New Hampton 29 Sep 1949 (V.H. Hebert). Its increase in New England from about 1909 to the late 1920s mentioned by Forbush (1929) apparently continued in New Hampshire.

1950 to present. Uncommon migrant, less frequently reported since the late 1970s; numbers continue variable as a nesting species but overall are stable (Hunt 2009b).

Spring. Earliest known arrivals are 1 at Concord 24 Apr 1980 (H.B. Miller) and 1 at New Hampton 1 May 1970 (R.W. Smart). In 1950–1980, mean first arrival date was 12 May, but by 1981–2006 mean first arrival date was earlier at 9 May. One at Star Island 9 May 2000 (R.W. Suomala). Peak migration period is the middle 2 weeks of May, peak counts have been 19 at Hanover 10 May 1961 (C. Wellman) and 10 at Portsmouth 19 May 67 (J.E. Cavanagh), and most birds have passed through the southern part of the state by 30 May. Extreme late spring dates have been 1 at Star Island 9 Jun 1972 (A.C. Borrer) and 1 at East Rindge on 20 Jun 1970 (A.D. Upjohn). A majority of first arrival reports are from the Connecticut River valley.

Summer and breeding. A rare and sporadic breeder in

Coos County and the White Mountains. The *Atlas of Breeding Birds* project 1981–1986 found evidence of breeding in 19 priority atlas blocks, all but 2 possible records in Coos County, with 4 confirmations (Foss 1994). RNEB includes breeding season reports from Albany, Errol, Franconia, Lincoln, Pittsburg, and Whitefield in years 1953, 1954, 1959, and 1964–1967 (Foss 1994). BBS reports have come occasionally from Crawford Notch and Jefferson. Sightings from Pittsburg and occasionally elsewhere appear every year or 2 in NHBR: a few males at Pittsburg 20–27 Jun 1954 (M. Halberg *et al.*), feeding young at Lincoln in breeding season 1956 (H.C. McDade), in the Pemigewasset Wilderness 21–28 Jun 1959 (H.C. McDade), and in Jackson 22 Jun 1966 (J. Warren *et al.*). The last 3 of these could either be breeding birds or just males found singing south of their normal breeding range as has been reported (Dunn and Garrett 1997). A pair was carrying food for young at Cherry Pond, Jefferson, 8 Jul 1995 (P.D. Hunt *et al.*) at the unusual low elevation of 1000 feet; they were present both of the next 2 summers. There may be more birds present than records show; large areas of appropriate habitat are not accessible and the birds are inconspicuous even where they occur. Populations tend to increase in years of Eastern Spruce Budworm outbreaks such as in the late 1970s and early 1980s. New Hampshire BBS population trend data show a significant decline averaging 7.2% per year for 1966–2009 and 1999–2009 (Appendix IV), a much sharper decline than in the regional area. Cohn-Haft (1995) reported it common in 1982 at the Second College Grant but absent in 1986.

Fall. The first suspected southbound migrants are usually detected in late July or early August: Chichester 30 Jul 1975 (M. Smith), Franconia 1 Aug 1973 (M.L. Fuller), and Monroe 2 Aug 1957 (R.B. Emery). Peak migration period is the last week of August and the first week of September; peak counts in that period have been 10–20 birds at Mt. Wildcat 12 Sep 1983 (T. Richards), 18 at Moultonborough 23 Aug 1983 (A. Groth), and 23 at New Hampton 27 Aug 1957 (V.H. Hebert). Peak counts since 1990 have only been in the 5–8 range. Extreme dates for the Isles of Shoals are 3 at Star Island 18 Aug 1981 (J. Ginnaven) and 1 there 26 Oct 1970 (D.W. Finch), peak count being “birds in every bush” there 2 Sep 1974 (R.S. Holt). Most birds are gone by the first week of October, and extreme late fall reports are 1 at Exeter 25 Oct 2008 (M. Suomala), 1 at Rye 26 Oct to 15 Nov 2006 (M. Iliff *et al.*), a second bird at Rye 19 Nov to 3 Dec 2006 (R.W. and M. Suomala), and 1 at Rye 28 Nov 1996 (A. and L. Maley).

Winter. One at Concord 11–14 Dec 1959 (H.B. Miller, A.E. Lajoie). One first found at Odiorne Point 26 Nov 2011 (J. Lambert) was relocated there 7 Jan 2012 (J. Bockius, F. Schneider) and continued through the winter (mult. obs.) to 24 Mar 2012 (S.R. and J. Mirick).

Remarks. There may be a connection between the declines in this species, Tennessee Warbler and Bay-breasted Warbler and spraying in Canada to suppress Eastern Spruce Budworm infestations (R.A. Quinn pers. comm.).

Cerulean Warbler *Setophaga cerulea*

Status. A rare southern warbler, it has become nearly an annual spring visitor and rare breeder since the mid-1980s. A species of Special Concern in New Hampshire.

Early reports to 1950. One was seen in Peterborough 27 May 1918 (G.W. Hagar) and 1 was collected in Holderness 8 Jun 1929 (R.B. Harding) with the specimen left to the BSNH (Forbush 1929) but it cannot now be found.

1950 to present. Significant increase in frequency of occurrence and now a very rare nester but in only 1 known location.

Spring, summer, and breeding. All 24 known spring reports were between extreme dates of 6 May to 25 June. First arrivals include 1 at West Sandwich 16 May 1982 (B.S. Ridgely), 1 at Pawtuckaway State Park in Nottingham 16 May 1997 (A. and B. Delorey), 2 at Nottingham 6 May 2000 (A. and B. Delorey), and 1 at Deerfield 11 May 2003 (B. Griffith). Late reports are at Mascoma Dam in Lebanon 25 Jun 1995 (P.D. Hunt) and at Hinsdale 20 Jun 1998 (F. VonMertens). Other spring locations include Canaan (1980), Candia (1980), Concord (2008), New London (1988), Exeter (2008), Salisbury (1998), Webster (1989), Lee (2005), Hillsborough (1994), Enfield (1995), Rye and Derry (1997), North Hampton (2006), Windham (2002), and Weare (2003).

A number of reports 1992–2009 were from Pawtuckaway State Park, its stronghold in the state, where it was variously reported from 6 May into July. Breeding was confirmed there on 27 May 1995 with a female carrying nesting material (I.C. MacLeod *et al.*) and 1 on a nest 16 Jun 1996 (S.R. Mirick). An early fall migrant, by far the latest known fall report is 1 at Dover 3 Oct 2008 (L. Kras, D. Burdick *et al.*). This species has been extending its range in very small numbers into the northeast in recent decades but declining in other parts of its historical range. The first nesting in MA was in 1989 (Veit and Petersen 1993). General review of range and expansion into New Hampshire in WAP (2005).

Northern Parula *Setophaga americana*

Status. Possibly a moderate population decline 1875 to 1950 but stable to a slight increase since. A common spring and fall migrant and an uncommon summer resident and breeder from the White Mountains northward and locally south of there.

Early reports to 1950. Belknap’s (1792) “Blue Titmouse, *Parus americanus*,” probably belongs here as this name

was used by Linnaeus. Brewster considered it an abundant spring and fall migrant at Lake Umbagog in the 1870s and a common summer resident there; his extreme dates were 11 May to 9 October (Griscom 1938). Others writing about the same time thought it a common spring and fall migrant and common summer resident in the mountains and northern part of the state (Coues 1868, Minot 1876, Allen 1903, Wright 1911) but uncommon and local as a summer resident and breeder south of the mountains (Dearborn 1898 and 1903, Howe 1901–1903, Marble 1907, Thayer 1912). The Dwight collection contained 6 taken at Hollis 13 May to 11 July in the years 1875–1882 (AMNH #380647–380652) and 2 taken at Wolfeboro 12 and 16 Sep 1879 (AMNH #380653–380654). Shaw (1885b) reported a nest and eggs at Hampton 6 Jun 1885. In the central Merrimack River valley at Webster, Goodhue (1877a) thought it a very common migrant, but at Concord, White (1924b, 1937) thought it less common 40–60 years later (especially in fall). Overall, there seems to have been a moderate decline 1875 to 1950. Many authors comment on its use of *Usnea* lichen as a nest material and suggest the bird's decline may be related to a decline of the lichen from the area (Bent 1953) due to air pollution (Ridgely 1977), or its decline just may be cyclical (Curson *et al.* 1994).

Reports submitted to RNEB in 1936–1949 show it a regular spring migrant, earliest arrival being 28 Apr 1938 at Manchester (E.J. Goellner), earliest as far north as Dixville 8 May 1949 (F. Allen), and usual first arrival by 8–15 May. Reports in late June as far south as Wilmot (1939, 1940, 1945) and Lebanon (1945) were unusual. Southbound birds were noted by the third week of August, and peak fall migration was the first 2 weeks of September. Latest report in fall was 11 Oct 1939 at Hanover (R.L. Weaver).

1950 to present. Increase as a breeding species since 1990 (Hunt 2009b), with some variation year to year.

Spring. Earliest known arrivals are 19 Apr 2004 at Concord (P.D. Hunt) and 22 Apr 1962 at Seabrook (R.W. Smart); mean first arrival since 1950 is 3 May. Highest spring counts were recorded 11–20 May in the 12–30 range; extreme high counts were 150 on Star Island 14 May 2011 (E.A. Masterson), 130 in the entire Lake Umbagog area 17 May 1964 (V.H. Hebert *et al.*), 40 at Lake Umbagog 16 May 1965 (V.H. Hebert *et al.*), and a statewide fallout estimated at 75+ in 11–19 May 1996 (v.o.). Migration is usually over by the last week of May, and latest probable spring migrant known is 1 at Star Island 6 Jun 1971 (ASNH field trip); probable nonbreeding laggards were 1 at Newfields 13 Jun 2004 (S.R. Mirick) and 1 at Portsmouth 16 Jun 1971 (J.E. Cavanagh).

Summer and breeding. The *Atlas of Breeding Birds* project 1981–1986 documented 60 possible and confirmed priority atlas blocks statewide, only 10 of which were

widely scattered south of the mountain foothills (Foss 1994). Highest density was in Coos County. New Hampshire BBS population trend data show an average of +4.4% increase per year in 1966–2009 and 1999–2009 (Appendix IV), and data for the northeastern states show a strong increase in 1966–1979 beginning in the early 1970s (Robbins *et al.* 1986). High breeding season counts include 39 at Errol 30 Jun 1958 (V.H. Hebert *et al.*), 84 at Lake Umbagog 29 Jun–1 Jul 1959 (V.H. Hebert *et al.*), 20 at Pittsburg 12 Jun 1992 (J. Barry), and 20 at Pittsburg 17 Jun 2000 (A. Delorey *et al.*). Allison and Allison (1979) thought it an uncommon summer resident near Dublin, and Ridgely (1977) considered it an uncommon and local breeder near Squam Lake. Cohn-Haft (1995) called it an abundant summer resident at the Second College Grant.

Fall. Southbound birds are sometimes detected by the first week of August, and peak migration period is late August and the first 2 weeks of September when 5 or more may be found per day; high count in this period is 28 at Pittsburg 31 Aug 1956 (M. Halberg *et al.*). Latest known at Star Island is 1 banded 29 Sep 2000 (R.W. Suomalainen). The last birds are usually gone by the first week of October with stragglers lingering into November: 1 at East Kingston 29 Oct 1975 (D.W. Finch), 1 at New Hampton 3 Nov 1966 (R.W. Smart), 1 at Rye 3 Nov 2002 (R.A. Quinn *et al.*), 1 at Concord 12 Nov 1960 (H.B. Miller), and 1 at Charlestown 19 Nov 1970 (W.W. and G.L. Kidder).

Magnolia Warbler *Setophaga magnolia*

Status. Common to very common migrant, more numerous in spring, and a common summer resident and breeder; a very rare breeder in the southeast.

Early reports to 1950. It was considered a common migrant and breeding species in the White Mountains and northwards in the late 1800s. It nested in the White Mountains (Chickering 1875), and Brewster (1877a) thought it abundant at Lake Umbagog in the 1870s; it declined to merely common there by about 1900 (Griscom 1938). Marble (1907) called it the “commonest warbler around the Crawford House in Crawford Notch.” In the Jefferson region Wright (1911) found it a common summer resident up to 4000 feet on Mt. Adams, found up to 45 singing males in a day between Jefferson and Bretton Woods, and recorded 1 as late as 8 Oct 1904.

Maynard (1871) and Bolles (1893b) considered the White Mountains the southern end of its breeding range. South of the mountains, Dearborn (1898) found it a scarce breeder and mostly a migrant in Belknap and Merrimack Counties but said it did not breed in the coastal region (1903) and was scarcer as a migrant there in fall than in spring. The Dwight collection contained 6 spec-

imens taken at Hollis 20–27 May 1876 (AMNH #381105–381110) and 1 taken at Wolfeboro 6 Sep 1879 (AMNH #381111). Goodhue (1877a) found it a common migrant at Webster but a very scarce breeder there. Howe (1901–1903) thought it a common summer resident in the Bridgewater area. Allen (1903) reported it bred in small numbers at Mt. Monadnock, and Thayer (1912) called it common near Dublin. At Concord, White (1924b) called it a regular spring migrant in variable numbers and uncommon there in fall; later (1937) he noted a recent decline and thought it only a rare summer resident; his extreme dates were 8 May 1930 to 22 Sep 1925.

Reports submitted to RNEB 1936–1949 indicate earliest arrival on 3 May 1942 both at Andover (K.C. Elkins) and Hanover (F. West, M. Choukas) and on 5 May 1949 as far north as Errol (F. Allen). First arrival was typically 5–17 May. Southbound migrants in fall were usually detected by mid-August, peak migration period was the middle 2 weeks of September, and most birds were gone by the first week of October. Latest record for the Connecticut River valley was 1 at Hanover 16 Oct 1939 (R.L. Weaver) and for the Merrimack River valley was 1 at Manchester 5 Nov 1937 (E.J. Goellner).

1950 to present. Some periodic fluctuation in numbers but breeding population stable since 1990 (Hunt 2009b).

Spring. Earliest known spring arrivals are Tuftonboro 25 Apr 1998 (A.J. Vazzano *et al.*) and 5 times on 28 April; mean first arrival date is 6 May. General arrival is usually 8–11 May, and peak migration period is the last 2 weeks of May. Peak counts are 16 at White Island 29 May 2002 (D. Hayward), 25 Pittsburg 14 May 2000 (E.B. Nielsen), 42 at Pondicherry Refuge in Jefferson 27 May 1997 (R.A. Quinn), and 45 at the coast 16 May 1965 (R.W. Smart *et al.*). Extreme high counts probably including both migrants and residents are 97 at Pittsburg 18–19 May 1964 and 500 in the Lake Umbagog area 17 May 1964 (both V.H. Hebert *et al.*). Latest certain migrants are singles at White and Seavey Islands 17 Jun 1998, 9 Jun 2005, and 10 Jun 2006 (all D. Hayward *et al.*).

Summer and breeding. Usual breeding habitat is young conifer forest, often spruce and fir, between 1000 and 4000 feet elevation. Breeding evidence was found in 70% of the priority atlas blocks during the *Atlas of Breeding Birds* project 1981–1986 in all northern and most western parts of the state (Foss, 1994), a distribution apparently very similar to what it was a century earlier. BBS data for 1966–1994 show some fluctuation in numbers but little change on balance. New Hampshire BBS population trend data show virtually no change in either 1966–2009 or 1999–2009 (Appendix IV). Some high breeding season counts include 84 at Lake Umbagog 29 Jun–1 Jul 1959 (V.H. Hebert *et al.*), 125+ in the Pittsburg region in late Jun 1961 (R.W. Smart, V.H. Hebert), 36 at Pittsburg 10 Jun 1994 (A. Delorey *et al.*), 30 at Errol 2 Jun 1999 (R.A.

Quinn), and 45 at Pittsburg 17 Jun 2000 (A. Delorey *et al.*). Ridgely (1977) found it a widespread and common breeder at higher elevations in the Squam Lake area, Allison and Allison (1979) thought it an uncommon summer resident near Dublin, and Cohn-Haft (1995) called it a common breeder in second growth at the Second College Grant.

Fall. First southbound migrants are usually detected by mid-August including birds banded at Center Harbor 12 Aug 1972 (J.P. Merrill), 1 seen at Kingston 16 Aug 1979 (D.W. Finch), 15 at Sandwich 16 Aug 1999 (A.J. Vazzano *et al.*), and 1 banded at Star Island 17 Aug 1999 and on 17 Aug 2000 (both R.W. Suomala *et al.*). Numbers of birds are still often present in the north through August: 42 at Pittsburg 11 Aug 2003 (E.B. Nielsen) and 32 at Sandwich Notch 27 Aug 1980 (R.S. Ridgely). Daily counts in the 20–30 range often occur in late August and daily counts in the 5–10 range in September. Peak fall counts are 45 at Hanover 24 Sep 1962 (H. Weber) and 200+ at Jefferson 2 Sep 1978 (R.J. Bradley *et al.*). Most birds are gone by the end of the first week in October. Two-thirds of September and October reports come from inland localities and one-third from the coast. Extreme late reports are 1 at Concord 8 Nov 1969 (I.K. Whiting), 1 at Canaan 14 Nov 1957 (A. McAllister), and 1 at North Hampton 28 Nov 2010 (S.R. and J. Mirick; photo).

Bay-breasted Warbler *Setophaga castanea*

Status. It can vary from uncommon to rarely common in migration with numbers generally higher in fall than spring. Outbreaks of Eastern Spruce Budworm often dictate the abundance of this species, causing its numbers as a migrant and summer resident to fluctuate, sometimes widely.

Early reports to 1950. Maynard (1871) found it the most abundant warbler in the Umbagog region, several nests being found. Brewster reported erratic numbers at Lake Umbagog 1871–1909, a very common summer resident and breeder in 1871, 1872, 1896, and 1897, but absent entirely in 1879 (Griscom 1938). Dwight had 3 specimens from Hollis in May and September 1876 and 1877 (AMNH #382836–382838). North of the mountains in the Jefferson area, Wright (1911) considered it a regular and sometimes common though patchily distributed summer resident; he recorded a population increase from 1905 to 1909 when he recorded 27 singing males on 25 Jun 1909, followed by a swift decline in 1910 and 1911. Though Goodhue (1877a) thought it might once have nested near Webster, it was rare there, and Dearborn (1898) considered it only a migrant in Belknap and Merrimack Counties.

Also south of the mountains, Dearborn (1903) called it a regular but scarce migrant near Durham, Thayer (1912)

found it only a migrant near Dublin, and White (1924b, 1937) considered it an erratic transient at Concord noting that it was common in 1917 and 1926 but uncommon to rare most other years, his extreme dates being 15 May 1918 to 29 May 1917 in spring and 25 August to 30 September in fall. Allen (1903) found it breeding in the White Mountains from 1800 feet in rich damp coniferous woods on southern exposures up to about 4000 feet among the small balsam timber. It was a regular breeder at Mt. Monadnock and was found at an elevation of 1600 feet in 1921, and at 1450 feet on 7 Jul 1921 and 4 Jun 1922 (Whittle 1922a, 1922b, 1923). A nest was found on the shores of Squam Lake 5 Jun 1930 (Bent 1953), and the species was found on Mt. Kearsarge in Salisbury the summers of 1936–1940 (K.C. Elkins *in* Foss 1994).

Reports submitted to RNEB include the earliest arrival 6 May 1949 at Bow (G.P. Baker *et al.*) and typical first arrival 14–19 May. Summer reports were all from localities in the White Mountains or Coos County. The first southbound migrants found south of the mountains appeared by the first week of September, peak migration period was the middle 2 weeks of September, and latest report was 1 at New Hampton 29 Sep 1946 (V.H. Hebert).

1950 to present. This species' numbers continue to fluctuate in relation to Eastern Spruce Budworm outbreaks. General numbers in non-outbreak years peaked in the late 1950s and have dropped substantially since (WAP 2005, Hunt 2009b).

Spring. First spring arrival dates are Marlboro 1 May 1956 (I. deForest), Tamworth 2 May 1993 (B. Skele), New Hampton 5 May 1960 (R.W. Smart), and Windham 5 May 2003 (M.G. Harvey). Mean first arrival since 1950 is 12 May, and peak migration period is the third week of May. At least 35% of first arrivals were from the Connecticut River valley, a much higher percentage than for most warblers. Some first arrivals were found in the Lakes Region or north of the White Mountains rather than in more southern areas, such as Monroe in 1953 and 1965 and Pittsburg in 1998. High spring counts are 12 at South Hampton 19 May 1995 (D. Strong) and 30 at Hanover 22 May 1955 (E. Holyoke *et al.*). South of the mountains, mean last migrant date is 23 May, and latest mainland migrant date is 1 at Dublin 4 Jun 1956 (E. and K. Allison). Extreme dates for the Isles of Shoals are from 1 at White and Seavey Islands 9 May 2000 (D. Hayward, M. Charette) to 1 at Star Island 7 Jun 1999 (R.W. Suomala).

Summer and breeding. The White Mountains are the southern limit of this species' breeding range where it nests up to 4000 feet elevation. During the *Atlas of Breeding Birds* project 1981–1986 at least possible breeding was found in 27 priority atlas blocks in this area (Foss 1994). An Eastern Spruce Budworm outbreak in the 1950s caused the highest counts ever reported: on 8 Jul 1953 1



report stated, "Most common warbler in Pittsburg, 30 singing in virgin spruce at the end of East Inlet" (T. Richards). Numbers increased in the 1960s; peak counts were 60 at Pittsburg 17 May 1965 (V.H. Hebert), 80+ at Pittsburg 28 May 1960 (V.H. Hebert *et al.*), 32 at Lake Umbagog 16 May 1965 (V.H. Hebert), and 80 at Lake Umbagog 17 May 1964 (V.H. Hebert). Numbers declined significantly by the late 1960s as the Eastern Spruce Budworm infestation declined and have recovered very little. An Eastern Spruce Budworm outbreak in Coos County in the late 1970s and early 1980s did not result in higher numbers being reported than in the 1960s. New Hampshire BBS population trend data show a significant decline of 5.6% per year in both 1966–2009 and 1999–2009 (Appendix IV). Ridgely (1977) thought it a very uncommon breeder so far south as the Squam Lake region, then only at higher elevations and not reported since the 1980s (R.S. Ridgely pers. comm.). Cohn-Haft (1995) reported it an uncommon breeder in the Second College Grant. Typical high recent numbers are 30 at Pittsburg 8 Jun 2003 (E.B. Nielsen) and 17 at East Inlet in Pittsburg 23 Jun 2005 and 8 Jul 2002 (both E.B. Nielsen).

Fall. Earliest known southbound birds were 1 far south at Newmarket 10 Jul 2007 (H. Chary), and 1 at New Hampton 25 Jul 1981 (V.H. Hebert). Usual first evidence of migration is in the first week of August: 1 at Hanover 7 Aug 1960 (J.E. Cavanagh) and 1 at Guilford 7 Aug 1970 (R.W. Smart). Migration peaks late August to early September. High counts include 20 at Hanover 15 Sep 1956 (H.C. McDade *et al.*), 18 at Sandwich 5 Sep 1984 (B.S. Ridgely), and 17+ at Center Harbor 23 Aug 1983 (B.S. Ridgely). Notable fall reports at Star Island are 1 on 18 Aug 1979 (J. Ginaven), 1 on 24 Aug 1972 (J.E. Cavanagh), and 1 on 27 Sep 2000 (R.W. Suomala). Forty-three were banded in the peak migration period at Center Harbor 1–12 Sep 1973 (J.B. Merrill). Latest known fall records are 1 at Moultonborough 7 Nov 1954 (I.A. Behr), at Concord 3 Nov 1962 (H.B. Miller), and at Rye 12 Oct 1994 (P.D. Hunt, R.A. Quinn).

Blackburnian Warbler *Setophaga fusca*

Status. Fairly common migrant and common summer breeder in conifers from 600–3000 feet elevation.

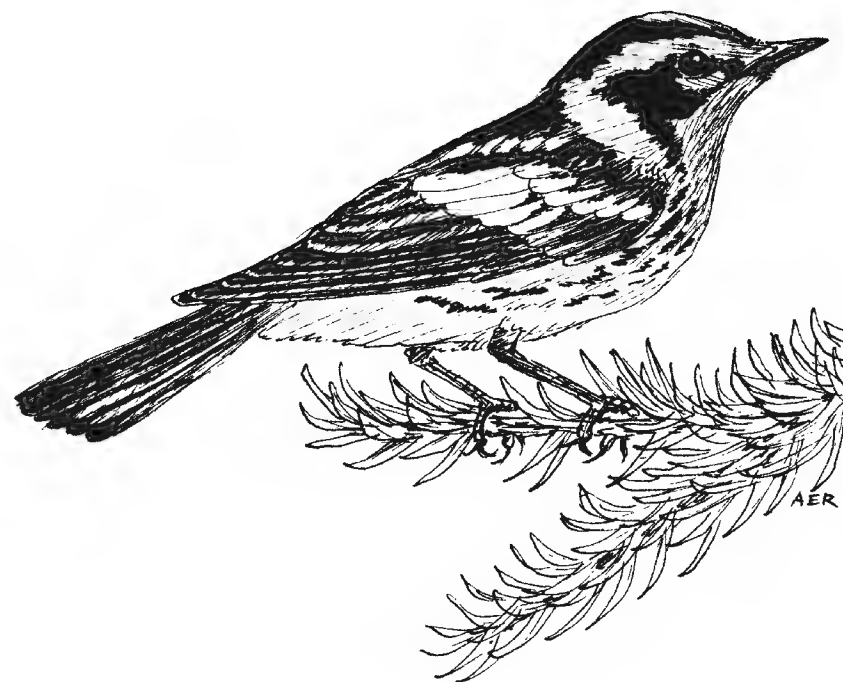
Early reports to 1950. Samuels (1872) considered it rare in New England but Maynard (1871) thought it common in Coos County. Near Lake Umbagog in 1871–1909, Brewster first found it common in summer and an abundant spring migrant, but it declined significantly there by 1903 as the spruce forest was cut. Allen (1903) thought it a rather common summer resident in appropriate habitat statewide. Goodhue (1877a) reported it common in summer at Webster, Dearborn (1898, 1903) said it was a regular spring migrant in Belknap and Merrimack Counties though a scarce migrant at the coast. Dwight had 10 specimens from Hollis taken from May to September 1875 to 1889 (AMNH #382492–382501) and 2 from Campton Village taken 18 Jul 1885 (AMNH #382502–382503). Chadbourne (1887) reported it at 3800 feet on Mt. Washington. Howe (1901–1903) called it an uncommon summer resident at Bridgewater, and Marble (1907) thought it “one of the most common summer residents” at Crawford Notch. Wright (1911) described it as “a common summer resident of mixed woods and conifers and common fall migrant” in the Jefferson region up to 3000 feet elevation. In the Dublin area Thayer (1912) called it very common, and Bowles (1895) reported a nest 8 Jun 1890 while Anonymous (1890) related “near Mt. Monadnock in June, 5 eggs collected.” At Concord, White (1924b, 1937) called it a common migrant but only uncommon as a breeder, his earliest in spring being 4 May 1919 and latest in fall being 27 Sep 1919. Forbush (1929) and Goodhue (1922) both commented that this species was probably not as rare as generally supposed because of its reclusive habits.

Reports submitted to RNEB include the earliest spring arrival of 2 May 1942 at Hanover (M. Choukas) and the peak migration period of 12–24 May. High spring counts were 60 in 11–17 May 1942 period at Hanover (M. Choukas) and 66 there on 19 May 1940 (R.L. Weaver). The first southbound migrants were often detected in the last week of August, and peak fall migration period was 5–15 September. Latest reports in fall are 23 Sep 1945 at Andover (K.C. Elkins) and 26 Sep 1947 at New Hampton (V.H. Hebert).

In summary, this species probably has been reasonably common overall statewide from the period of first settlement until 1950.

1950 to present. Population trend listed as uncertain by Hunt (2012) and its numbers do not seem to have fluctuated quite as much in relation to Eastern Spruce Budworm outbreaks as some other warbler species.

Spring. First spring arrivals are Lempster 28 Apr 2009 (P. Newbern) and Nottingham 29 Apr 1995 (S.R. Mirick *et*



al.). Mean first arrival date is 5 May, and peak spring migration period is the middle 2 weeks of May. Most first reports have been from the Merrimack valley and south of the Lakes Region. Peak spring counts are 30 at Washington 16 May 2009 (P. Newbern) and 25 at Hanover 10 May 1961 (J.E. Cavanagh). Late spring migration dates are in 2 groups: (1) on the mainland south of the Lakes Region, most reports of presumed migrants end by mid-June as 1 at Auburn 15 Jun 1999 (R. Andrews), and (2) reports from the Isles of Shoals also extending into June: 1 at Star Island 1 Jun 1969 (E.W. Phinney), 1 there 3 Jun 1999 (R.W. Suomala), and 1 at White and Seavey Islands 4 Jun 2001 (D. Hayward *et al.*).

Summer and breeding. Ridgely (1977) considered it locally common in the Squam Lake area, and Allison and Allison (1979) called it a fairly common summer resident near Dublin. Cohn-Haft (1995) thought it an abundant breeder at the Second College Grant in 1982, an Eastern Spruce Budworm outbreak year there. The *Atlas of Breeding Birds* project 1981–1986 found evidence of nesting in 80% of the priority atlas blocks, mainly in the northern 3 counties but with a few in the south and southeast, concentrated at elevations between 600 and 3000 feet (J.McDermott *in* Foss 1994). This species tends to have larger broods during Eastern Spruce Budworm outbreaks (Dunn and Garrett 1997). An outbreak occurred in Coos County in the 1960s to the early 1980s. While highest counts come from the Pittsburg–Errol area, numbers can fluctuate markedly. BBS data from 1966–1994 show such annual fluctuations, but overall numbers remained little changed on balance over the entire period (NHBR 13 [2]: 33). New Hampshire BBS population trend data show very little (average of 1.1% per year) change in both 1966–2009 and 1999–2009 (Appendix IV). Peak summer counts include 70+ at Pittsburg 1961 (V.H. Hebert *et al.*), 29 at Umbagog 1965 (V.H. Hebert), 22 at Pittsburg 18 Jun 2006 (E. Nielsen), and 17 at Errol 1 Jun 1997 (J.W.

Berry). High summer counts for south of the mountains are 15 pairs at New Hampton in 1962 (V.H. Hebert *et al.*), 11 at Nottingham 29 Jun 1998 (P. Newbern), 12 on Mt. Kearsarge in Wilmot and Warner 5 Jun 2011 (P. and J. Brown), and 6 “nesting south of range” in Lee, 1962 (O. Earle *et al.*). Occasionally a wandering bird or very late migrant appears far south in summer: Rye 21 Jun 1959 (K.C. Elkins).

Fall. The earliest probable southbound migrant is 1 at Canterbury 31 Jul 1994 (R.A. Quinn). First southbound migrants are usually detected in the first 2 weeks of August, mean first arrival date being 9 August. Peak fall migration is typically the last week of August and the first week of September. A high fall count away from breeding areas is 9 at Enfield 5 Sep 1993 (P.D. Hunt). Extreme dates at the Isles of Shoals are 1 at Star Island 18 Aug 1979 (J. Ginaven) and 23 Sep 2007 (ASNH field trip). Latest known state reports are 1 at New Hampton 19 Oct 1975 (R.C. Hebert), Jaffrey 16 Oct 1962 (Torrey *et al.*), and Chichester 15 Oct 1967 (M. Smith).

Yellow Warbler *Setophaga petechia*

Status. Common migrant and summer resident below 1000 feet elevation.

Early reports to 1950. The “Yellow Crown, *Muscicapa flava*,” of Belknap (1792) could belong here. Deforestation surely created more appropriate habitat for this species 1800–1900, primarily along rivers and associated streams. Brewster found it only 3 times near Lake Umbagog: 14 Jun 1896 at Colebrook and 1 Sep 1898 and 26 Jul 1907 at the lake itself (Griscom 1938). Wright (1911) found it reasonably common but only along streams near Jefferson and Lancaster; he once found it at 1400 feet elevation in 1910 and had a late date of 18 Sep 1907. Samuels (1867) and Allen (1903) considered it a very common migrant and summer resident in much of the state but less common above 1000 feet elevation and in the White Mountains and farther north. Dwight had 4 specimens taken at Hollis 13 May to 23 August in the years 1875–1879 (AMNH #380855–380858). It was common in Belknap and Merrimack Counties (Dearborn 1898), in the coastal region (Dearborn 1903), at Northfield (Dearborn 1905), the Bridgewater area (Howe 1901–1903), at Webster (Goodhue 1877a), and at Concord (White 1924, 1937), but Allen (1903) found it very local north of Lake Winnepesaukee and absent north of Intervale, Franconia, and Bethlehem. Marble (1907) never recorded it at Crawford Notch. Thayer (1912) called it common at Marlboro but it was rare as high as Dublin.

Reports submitted to RNEB include the earliest spring arrival before 1950 of 2 May 1942 at both Hanover (R.L. Weaver) and at Concord (F.B. White). Usual arrival was

6–14 May, and high spring count was an exceptional 130 birds 11–17 May in 1942 at Hanover (R.L. Weaver). An early fall migrant, many birds were gone by the last week of August; latest reported in fall was 1 at New Hampton 23 Sep 1947 (V.H. Hebert). Allan (1931) reported a migrant at the Isles of Shoals on an unnamed island 12 Aug 1929.

1950 to present. Continues to be moderately common with perhaps a slight decline since the 1960s; it may have lost some habitat due to draining of wetlands (Lowther *et al.* 1999). Its breeding population is listed as declining by Hunt (2009b).

Spring. Earliest known spring arrivals are 1 at New Durham 19 Apr 2009 (S.B. Turner) and 1 at Sunapee at 22 Apr 1995 (B. Burdett); mean first arrival date is 3 May. Most first arrivals were reported from the Merrimack River valley; Concord reported 17 years of first state arrivals 1950–2007. Peak migration period is the first and second weeks of May, and typical single-day counts are 10–25. Peak known spring counts are 200+ in the coastal region 14 May 1961 (R.W. Smart, V.H. Hebert), 115 there 9 May 1965 (R.W. Smart), 43 at Dover 11 May 2004 (G.W. Gavutis, Jr.), and 40 at Rye 20 May 1990 (R.A. Quinn). Late migrants or prospecting birds that breed on nearby islands were at Seavey Island 1 Jun 1998 (J. Ellis, D. Hayward) and 17 Jun 2002 (D. Hayward *et al.*).

Summer and breeding. Birds generally breed below 1000 feet elevation. In the *Atlas of Breeding Birds* project 1981–1986, breeding was reported in 78% of priority atlas blocks. The species was widespread and reasonably common in appropriate habitat south of the White Mountains below 1000 feet elevation; missing blocks were at higher elevations or in heavily-forested regions, primarily in Coos County (Foss 1994). BBS data showed a sharp decline in 1966–1967 but from then to 1994 numbers show it holding its own or slightly increasing (NHBR 14 [2]: 35). New Hampshire BBS population trend data show an average decline of about 1.2% per year for both 1966–2009 and 1999–2009 (Appendix IV). Ridgely (1977) called it a fairly common breeder at low elevations in the Bridgewater area, Allison and Allison (1979) thought it rare in summer in the Dublin area, and Cohn-Haft (1995) found it only in Wentworth’s Location and Errol in the Second College Grant region.

Fall. An early migrant, some birds may depart breeding areas before the first southbound migrants are detected in late July: on Seavey Island 21 and 31 Jul 1998 (J. Ellis, D. Hayward), on White Island 25 Jul 1999 (D. Hayward), and on White Island 30 Jul 2004 (M. Barney). Most birds have gone by the end of the first week of September, though occasional birds are found to late September. Dates for Star Island include 1 on 18 Aug 1981 (J. Ginaven), 9 on 20 Aug 1999 (R.W. Suomala) and latest reports are birds banded on 30 September in both 1999 and

2000 (both R.W. Suomala). Extreme late reports are at Weare 18 Oct 1995 (M. Suomala), Jefferson 16 Oct 1966 (R.W. Smart), 1 at Concord 11 Nov 2007 (P.D. Hunt), and 1 at Exeter 3 Dec 2006 (R.W. and M. Suomala).

Winter. One found in Exeter on 17 Dec 1983 (D.J. Abbott, P. Vickery); observed at 30 feet for several minutes and described as in dull greenish plumage (D.J. Abbott pers. comm.; Stephenson 1984).

Taxonomic note. The local breeding form in New Hampshire is *S. p. aestiva*. The breeding race from Newfoundland, southern Labrador, Quebec, and westward, *S. p. amnicola*, is certainly an annual migrant through New Hampshire though considered hypothetical here for lack of a specimen. It migrates later than the local breeding race in both spring and fall. Difficult to identify in the field, it can be confused with some western races but tends to be darker and noticeably more greenish than the resident *S. p. aestiva*. Four reports of *amnicola*: once in spring at New Hampton 23 May 1973 (V.H. Hebert), and 3 times in fall, all at New Hampton: 11 Sep 1959 (V.H. and R.C. Hebert), 1 on 20–21 Sep 1960 (R.W. Smart *et al.*), and 1 on 19 Sep 1963 (V.H. and R.C. Hebert). Specimens of this race exist from both ME and MA. The Dec 1983 record is referable to either *S. p. amnicola* or possibly 4 other races (*banksi*, *parkesi*, *rubiginosa*, or *morcomi*) from far northwestern North America; see Browning (1994).

Chestnut-sided Warbler *Setophaga pensylvanica*

Status. A common migrant and widespread summer resident in brushy areas and regenerating forests up to 2500 feet elevation.

Early reports to 1950. Considered a very rare species in the early 1800s: “Audubon met with it but once; Wilson saw little of it; (and) Nuttall considered it rare and saw very few” (Forbush 1929). It first appeared in MA in 1830 (Bent 1953) and could have reached southern New Hampshire by 1850. South of the mountains, Allen (1903) thought it common in summer and Dwight had 8 specimens taken at Hollis between 12 May and 28 August 1875–1883 (AMNH #382696–382703). Dearborn (1898, 1903) considered it a common migrant and summer resident in Belknap and Merrimack Counties and near Durham. Goodhue (1877a) thought it the commonest summer resident warbler at Webster, and it continued very common at nearby Concord for 50 Years (White 1924, 1937). Howe (1901–1903) believed it common in summer near Bridgewater as did Thayer (1912) near Dublin. Danforth (1919, 1920) said it was increasing near Jaffrey and he found a pair with 5 young on 2 Jul 1918.

In the White Mountains and northward, Wright (1911) found it a common summer resident in scrub habitat in

the Jefferson area, the northernmost point where it was common at that time; his latest fall date was 4 Oct 1908. In the Lake Umbagog region, Maynard (1871) found it uncommon, and Brewster found it a rare and irregular summer resident there 1871–1909, though a regular migrant in small numbers in spring and fall (Griscom 1938). Marble (1907) thought it uncommon at Crawford Notch. By 1930–1936, G. L. Perry found it had increased greatly in the Lake Umbagog area from Brewster’s time (Griscom 1938).

Reports submitted to RNEB in 1936–1949 include the earliest arrivals in spring on 5 May at Manchester in 1939 (E.J. Goellner) and at New Hampton in 1949 (V.H. Hebert); usual spring arrival was 7–14 May. A survey of the greater Andover area in Jul and early Aug 1948 totaled 79 birds (K.C. Elkins). Peak fall migration period was the last week of August and the first week of September, and all birds were usually gone by the third week of September. Latest known reports in fall are 1 at Andover 30 Sep 1945 (K.C. Elkins) and 1 at New Hampton 3 Oct 1949 (V.H. Hebert).

In summary, this species showed a very significant increase from about 1850 as deforestation produced its preferred scrub habitat and then a modest decline since 1950 as reforestation has occurred.

1950 to present. Some occasional fluctuation in abundance but continues common, though it has declined since 1950 as its preferred scrub habitat has matured (Hunt 2009b).

Spring. Earliest known arrivals are 28 Apr in 1970 at Concord (T. Richards), at Lee in 1969 (O. Earle), at Weare in 2004 (P. Newbern), and in Exeter in 2009 (P. Chamberlin). Mean date of first arrivals is 3 May, about 50% of which occur in the Merrimack River valley, about 20% in the Connecticut River valley, and the rest at the coast. A surprising number of first arrivals occur in mid-state or farther north: Monroe, Sugar Hill, Jackson, Tamworth, and Lebanon. Peak migration period is the middle 2 weeks of May, and peak counts range up to 36, the maximum being “hundreds” at New Hampton 12–15 May 1958 (V.H. Hebert), though there are few single-day counts over 12 since 1990. Latest reported dates for certain migrants are at Star Island: 4 Jun 2000 (R.W. Suomala) and 6 Jun 1971 (ASNH field trip) and at Seavey Island 17 Jun 1998 (J. Ellis, D. Hayward).

Summer and breeding. During the *Atlas of Breeding Birds* project 1981–1986, evidence of breeding was found in 97% of all priority atlas blocks; the few missing were in high-elevation evergreen forest (Foss 1994). BBS data from 1966–1979 show an average of 14.7 birds per route, higher than any other state or province (Robbins *et al.* 1986). New Hampshire BBS population trend data show a slight decline (1.8% per year) in 1966–2009 followed by a surprising modest increase (+2.8% per year) in

1999–2009 (Appendix IV). Sample summer counts are 30 pairs at New Hampton 1960 (V.H. Hebert *et al.*), 59 in the Lake Umbagog area 29 Jul 1955 (V.H. Hebert *et al.*), 60+ at Pittsburg in 1961 (H.C. McDade), 28 at Littleton 8 Jun 1990 (R.J. Bradley), and 27 along Indian Stream in Pittsburg 24 Jun 2005 (E.B. Nielsen). North of the mountains in particular there have been periodic declines in the breeding population in such years as 1956, 1960, 1967, 1980–1982, and 1983–1985, but on balance the total BBS numbers for the state have shown only a modest drop 1966–1994 (NHBR 13 [2]: 33). Declines have been noted throughout its range because scrub habitat is now maturing, thereby reducing suitable breeding habitat (Dunn and Garrett 1997). In the Squam Lake region it is a common to very common resident up to 2500 feet elevation (Ridgely 1988), and Cohn-Haft (1995) found it fairly common at the Second College Grant.

Fall. The first southbound birds are often suspected by very late July or early August though the following records might also have involved resident birds: 6 at Gilsum 8 Aug 2009 (M. Wright), 10 at Andover 9 Aug 1977 (K.C. Elkins), and “birds migrating” at Madison 11 Aug 1959 (S.A. Eliot, Jr.). Peak migration period is late August and the first week of September. Most birds are gone by the last week of September. Latest known at Star Island is 1 banded 29 Sep 2000 (R.W. Suomala). There are over a dozen October reports, the latest of which are 1 at Concord 12 Oct 1973 (H.F. Everett), 1 at Rye 12 Oct 1996 (A. Delorey *et al.*), and 1 at New Hampton 21 Oct 1975 (R.C. Hebert).

Blackpoll Warbler *Setophaga striata*

Status. A common spring migrant, common to abundant fall migrant, and a summer resident and breeder above 2000 feet in the White Mountains and in much of Coos County.

Early reports to 1950. It was a common spring and common to abundant fall migrant south of the White Mountains and in the major river valleys (Goodhue 1877a; Dearborn 1898, 1903; Thayer 1912; White 1924, 1937) and a summer breeder at higher elevations in the White Mountains (Allen 1903, Forbush 1929). The Dwight collection included 3 specimens taken at Hollis in late May 1876 (AMNH #382907–382908, #382912), 3 taken there in early Sep 1876 (AMNH #382909–382911), and 2 taken at Wolfeboro in mid-Sep 1879 (AMNH #382913–382914). In the Jefferson region it was an abundant summer resident in the mountains from 1400 to at least 4800 feet elevation; 50 had been heard along the path into Tuckerman’s Ravine and within the ravine itself (Wright 1911). Howe (1901–1903) reported it on Mt. Cardigan 26 Aug 1895, and Marble (1907) thought it an uncommon summer resident at Crawford Notch, possibly

breeding there in 1907. However, in most areas north of the mountains below 1400 feet it did not breed, and Brewster found it only to be a seasonal migrant at Lake Umbagog (Griscom 1938). In the mountains where it breeds, it was found commonly from 1500 feet to treeline on north-facing slopes but only from 3000 feet up on south-facing slopes (Allen 1903). Lord’s (1918) earliest spring arrival date at Hanover was 21 May and his six-year average was 25 May.

Reports submitted to RNEB in 1936–1949 showed it to be a regular spring migrant south of the mountains from 12 May 1946 at New Hampton (V.H. Hebert) to 8 Jun 1945 at New Hampton (V.H. Hebert) with a peak in the last week of May. In fall, birds south of the breeding area were first noted in late August, earliest being 17 Aug 1949 at New Hampton (V.H. Hebert), and all birds were usually gone by the end of September. Extreme late dates of stragglers are 10 and 23 Oct 1944 at Hanover (V.H. Hebert) and 1 at Monroe 15 Nov 1944 (W.P. Smith).

1950 to present. Has declined as a breeder since 1990 (Hunt 2009b).

Spring. Extreme early arrivals are 1 at Franconia Notch 1 May 1980 (M. Kiley), Hillsborough 3 May 1979 (R.A. Sprague), Durham 7 May 1972 (J.E. Cavanagh), and mean first arrival date is 15 May. Typical high spring counts are 11–18 with highest numbers at the end of May: 40 Portsmouth 25 May 1971 (E.W. Phinney), 15 at Orange 30 May 1994 (P.D. Hunt), and 15 banded at Star Island 3 Jun 2000 (R.W. Suomala). Latest migrant dates south of the mountains range from 20 May to 10 June with a mean of 4 June. Notable late spring dates include 3 at Star Island 7 Jun 1970 (R.W. Smart) and New Hampton 10 Jun 1956 (V.H. Hebert *et al.*). Reports from White and Seavey Islands range from 4 Jun 2006 (D. and M. Hayward *et al.*) to 21 Jun 1998 (J. Ellis, D. Hayward). This last and 1 at Rye 24 Jun 1976 (J.E. Cavanagh) may have been very late migrants or nonbreeding stragglers.

Summer and breeding. The White Mountains are one of the southernmost areas of the species’ breeding range. In the *Atlas of Breeding Birds* project 1981–1986 there were 10 confirmed breeding records in priority atlas blocks, primarily in the White Mountains with a scattering farther north, and a southernmost record from Mt. Cube in Orford (Foss 1994). One in Warner on Mt. Kearsarge at 3000 feet elevation 27 Jun 2006 (T. Bronson *et al.*) could have been a very southern breeder or a very late migrant. Blackpoll populations in the White Mountains tend to increase with elevation from 1460 feet to treeline. Observations by T. Richards in 1946–1986 of 450 possible breeding sites in the White Mountains showed nearly half were between 3500–4500 feet and only 13% were below 2500 feet (T. Richards *in* Foss 1994). New Hampshire BBS population trend data show a sharp decline averaging about 7.0% per year in both 1966–2009 and 1999–

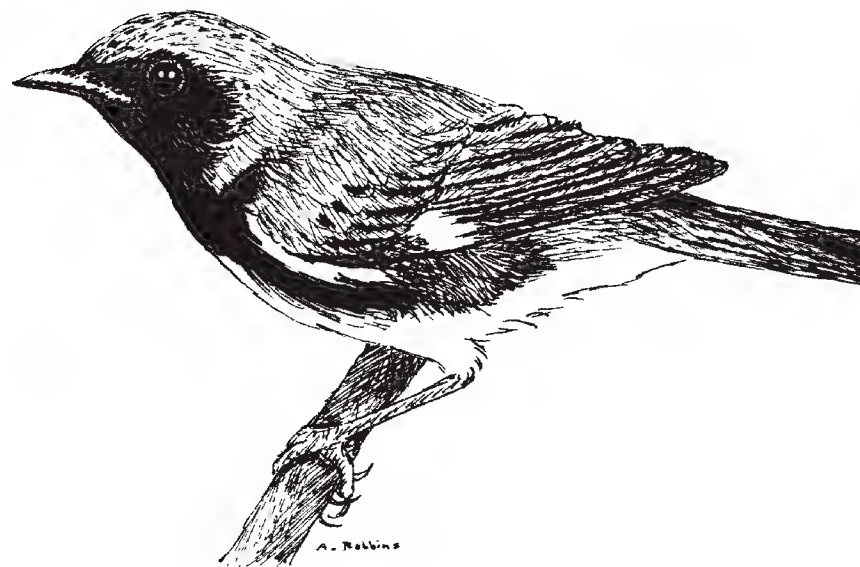
2009 (Appendix IV). Reports of high breeding season counts include 25 at Mt. Cardigan in Orange 1 Jun 1991 (P.D. Hunt), 48 at East Inlet in Pittsburg 13 Jun 2002 (E.B. Nielsen), 100 along the hiking trail loop at Beans Grant 11 Jun 2005 (K. Clayton), and 125+ at Pittsburg in Jul 1961 (R.W. Smart, V.H. Hebert).

Fall. Earliest signs of postbreeding dispersal and migration occur in the first half of August. Definite migration is observed in late August and early September: 20 at New Hampton 25 Aug 1984 (V.H. Hebert), 1 at Star Island 22 Aug 1979 (J. Ginaven) and 30 Aug 1999 (R.W. Suomala), and 4 banded at Star Island 3 Sep 2000 (R.W. Suomala). Numbers peak in the last half of September: 100 at Rye 20 Sep 1969 (L.G. and E.W. Phinney), 82 at Windham 21 Sep 2003 (M. Harvey), and 150 at Pittsburg 23 Sep 1962 (V.H. Hebert *et al.*). The last birds are usually gone by the second week of October. Extreme late dates are 1 at New Hampton 10 Nov 1966 (R.C. Hebert), Exeter 17 Nov 1953 (R.E. deLancy), North Hampton 17 Nov 1996 (S.R. Mirick), 3 at the coast 23 Nov 2008 (S.R. and J. Mirick), and 1 at North Hampton 26 Nov 2008 (M. Suomala).

Black-throated Blue Warbler *Setophaga caerulescens*

Status. Fairly common migrant and summer resident in an elevation range of 500–3000 feet in deciduous and mixed forests with a well-developed understory.

Early reports to 1950. Heavy cutting of upland deciduous and mixed forests by the 1850s is believed to have reduced its statewide numbers. Goodhue (1877a) called it common in summer at Webster, and Brewster found it common in the Lake Umbagog region 1871–1909 (Griscom 1938). The Dwight collection contained 1 taken at Campton Village 20 Jul 1885 (AMNH #381343) and 2 taken at Hollis 12 and 19 May 1876 (AMNH #381344–381345). It was rare in the Squam Lake region but common in Bethlehem in 1874 and in Franconia 1874–1877 (Faxon and Allen 1888), and it was a “less common” warbler in Merrimack and Belknap Counties but it bred in Sanbornton and New Hampton (Dearborn 1898). Howe (1901–1903) thought it uncommon in the immediate Bridgewater area, though more numerous at high elevations, and Marble (1907) thought it a rather common summer resident at Crawford Notch. In the Mt. Monadnock region it was common in old forests between 1000 to 2500 feet elevation (Thayer 1907, 1912). It was a common summer resident in the Jefferson region with the latest record 6 Oct 1907 (Wright 1911). Lord’s (1918) earliest arrival at Hanover was 4 May and his six-year average was 9 May. Allen (1903) observed 1 at 3360 feet elevation at Carter Notch 21 Jun 1900. At Concord, White (1924b, 1937) called it a common spring migrant and rare summer resident; his extreme dates there were 5 May 1919 to 6 Oct 1929. One reported at the Isles of



Shoals in the fall of 1929 (C.F. Jackson) was on an unidentified island (Allan 1931).

In the 1930–1936 period at Lake Umbagog, G. L. Perry found it had become “rather uncommon” (Griscom 1938). Reports submitted to RNEB in 1936–1949 show it to have been a regular spring migrant, the earliest known arrival being 1 May 1941 at Harrisville (J.M. Abbott), with peak spring migration period the middle 2 weeks of May. Southbound birds in fall were noted by mid-August, and latest fall record was 12 Oct 1946 at New Hampton (V.H. Hebert).

1950 to present. Increased as abandoned farmland reverted to hardwood forest, but now population trend listed as decreasing by Hunt (2012).

Spring. First spring arrivals are 1 at Epping 26 Apr 2009 (S.R. and J. Mirick) and Enfield 27 Apr 1994 (T. Bickell), and mean first spring arrival since 1950 is 3 May. Since 1950, the great majority of first arrivals have occurred in the Merrimack River valley, with one-third in the Connecticut River valley and only 4 reports from the coast. Peak spring migration period is the middle 2 weeks of May. Peak counts are 25 at Newbury 19 May 1995 (P. Newbern) and 26 at Jefferson 27 May 1997 (R.A. Quinn). Earliest known arrival at the Isles of Shoals is 1 at White and Seavey Islands 8 May 2002 (D. Hayward *et al.*). The last migrants have typically gone through by the last week of May with stragglers into June: Hampton 31 May 1977 (D.B. Kirwan), 28 birds at Errol probably including a few residents 1 Jun 1999 (J.W. Berry, R.A. Quinn), Star Island on 6 Jun 1971 (ASNH field trip), and Star Island on 22 Jun 1982 (L.E. Cole).

Summer and breeding. Ridgely (1977) called it a fairly common migrant and breeder in the Squam Lake area, Allison and Allison (1979) thought it fairly common near Dublin, and Cohn-Haft (1995) considered it a common summer resident and breeder at the Second College Grant. The *Atlas of Breeding Birds* project 1981–1986 detected breeding in 80% of priority atlas blocks in all parts

of the state except for the southeast coastal plain (R.T. Holmes and T.W. Sherry *in* Foss 1994). New Hampshire BBS population trend data show a small increase averaging about 1.8% per year in both 1966–2009 and 1999–2009 (Appendix IV). Typical summer BBS route counts south of the mountains average 3–12 birds. Breeding season counts are often higher in the north: 42 at Pondicherry in Jefferson 27 May 1997 (R.A. Quinn), 28 at Errol 1 Jun 1999 (J.W. Berry), and 27 birds at East Inlet in Pittsburg 19 Jun 2000 (E.B. Nielsen).

Fall. The first southbound migrants are usually detected by the second week of August; several reports 20 July to mid-August may have been postbreeding wanderers. Peak migration period is the last week of August and the first 2 weeks of September; counts over 7 birds in a day are unusual. Found at Star Island 22 Aug 1979 (J. Ginnaven) to 2 there 21 Oct 2007 (E.A. Masterson *et al.*). Most birds have left by mid-October but stragglers often linger later: Concord 14 Nov 2001 (R.A. Woodward), Nashua 17 Nov 2000 (M.G. Harvey), North Hampton 26 Nov 2008 (M. Suomala), and Deerfield 20–30 Nov 2005 (R. Moore).

Winter. Four winter records, all at inland locations and all but 1 since 1990: Hanover 13 Dec 2002 (W. and K. Eaton), 1 at Stratham 20–21 Dec 1998 (D.W. Finch) which survived the winter and was last reported 17 Apr 1999 (S.R. Mirick), 1 at Walpole 22 Dec 1979 (D.W. Brainard), and Ossipee 6 Jan 1995 (R. and I. Dunbar).

Palm Warbler *Setophaga palmarum*

Status. The “Yellow” form, *S. p. hypochrysea*, is an uncommon but regular spring and fall transient. A rare breeder first documented breeding in 1955.

Early reports to 1950. The earliest known records for the state are 3 in the Dwight collection collected at Hollis 14 Apr 1875, 3 May 1875, and 13 Apr 1876 (AMNH #383411–383413). Brewster thought it an uncommon to rare fall transient at Lake Umbagog 1871–1909, finding usually at most 1 per year between extreme dates of 17 September to 19 October (Griscom 1938). Goodhue (1877a) called it a fairly common spring and fall migrant at Webster as did Dearborn (1898, 1903) in Belknap and Merrimack Counties and near Durham, Allen (1903) in central New Hampshire, Marble (1907) at Crawford Notch, Thayer (1912) near Dublin, Wright (1911) in the Jefferson region, and White (1924b, 1937) at Concord. Between them, extreme dates by Wright (1911) and Dearborn (1903) were 16 April to 11 May in spring and 15 September to 11 October in fall.

Reports submitted to RNEB 1936–1949 show it to be a relatively early migrant in spring and later than most other migrant warblers in fall. Extreme early arrival is 26 Mar 1944 at Greenfield (C. Bosson), otherwise the earli-

est being 11 Apr 1947 at Monroe (I.F. Hunt). Peak spring migration period is the last 2 weeks of April as shown by a great flight with the highest known single-day spring counts at Manchester in 1939: 6 on 20 April, 40 on 25 April, and 1 on 28 April (E.J. Goellner). Latest known spring migrants were on 20 May 1947 both at Monroe (I.F. Hunt) and New Hampton (V.H. Hebert). Earliest southbound report in fall is 1 at New Hampton 15 Sep 1948 (V.H. Hebert), usual first arrivals are 20 September to 5 October, and latest known in fall are 1 at New Hampton 6 Nov 1947 (V.H. Hebert) and at Manchester 10 Nov 1939 (E.J. Goellner).

1950 to present. Continues as a moderately common seasonal transient, showing a noticeable increase since 1990s. A rare but increasing breeder at the southern limit of its breeding range (Hunt 2009b). See the excellent piece by Hunt (2010a) which details the breeding range expansion in New Hampshire and generally in the northeast and the migration pattern for both the “Yellow” and “Western” forms.

Spring. Earliest known arrivals were at Pembroke 30 Mar 1996 (W. Goodwill) and at Durham 3 Apr 1997 (M. Davis). Mean first arrival since 1950 is 15 April but has been getting earlier: 1950–1980 mean was 17 April while the 1981–2008 mean was 11 April. The *hypochrysea* form is the dominant migrant in spring accounting for 88% of inland reports and 99% of birds at coastal banding sites (Hunt 2010a). Most first arrivals appeared either on the coast or in the Merrimack River valley, nearly all in the southern third of the state; exceptions were Benton and Monroe in the northern part of the Connecticut River valley. Peak migration period is the last 2 weeks of April and the first week of May. Prior to 2000 usual daily counts were 1–8 with high counts of 10–12; a very high count was 25 at Hinsdale 7 Apr 1996 (A. Greenwood). Since 2000, counts in the 20–40 range began to be reported and recent high counts are now 100 at Brentwood 24 Apr 2007 (S. Young), 70 at Rochester 21 Apr 2002 (M. Suomala), 50 there 27 Apr 2008 (D. Hubbard), and 40 there 27 Apr 2007 (S.R. Mirick). Latest migrants include 1 at Star Island 3 Jun 1973 (ASNH field trip) and 1 at Exeter 2 Jun 1956 (N.L. Hatch). A possible late migrant was 1 at Hampton 22 Jun 1985 (D.B. Kirwan).

Summer and breeding. On 6 Jul 1955 2 birds were found at Floating Island Bog, Errol, by T. Richards (Hebert 1955); on 6 Jul 1957 he found 1 carrying food there (Hebert 1957), 2 were there 25 Jun 1960 (Hebert 1960a), and an adult and young were there 2 Aug 1980 and 2 Aug 1988. These reports established it as a breeding species for the first time (WAP 2005). One was found near Back Lake, Pittsburg, 4 May 1975 on an ASNH field trip (Hebert 1975). Workers on the *Atlas of Breeding Birds* project 1981–1986 found 1 singing at Dummer 4 May 1985, and 1 was at Errol 2 Aug 1985 (T. Richards). Two

were at Leonard Marsh, Errol, 21–28 Jun 1991 (S.B. and M. Turner). A summer high count is 5 at Errol 10 Jul 1993 and 1 Jun 1997 (R.A. Quinn *et al.*).

Since 1995, several new breeding locations have been found. Mountain Pond drainage in Errol had 6 birds 27 Jul 1997, an adult with 2 recently-fledged young on 2 Aug 1996 (C.J. Martin *et al.*), and 1 on 12 Jun 2000 (R.A. Quinn). At Little Cherry Pond in Jefferson/Whitefield a total of 10 were found 20 Jun 1997 (R.A. Quinn). A small population was discovered breeding at Church Pond Bog in Albany in 2008 (R.S. Ridgely) and observed by others in 2009. “2 adults [were] feeding two young in a [T]amarack [*Larix laricina*] bog” in Dummer 8 Aug 2000 (C.J. Martin). At Effingham, “2 birds, one carrying food” were seen 26 Jun 2007 (G.C. and A.E. Robbins) and 2 pairs were there 2 Jun 2008 (R.S. Ridgely). One was found at a bog in Bradford 17 and 30 Jun 2007 (J. Block) and the next year breeding was confirmed in Canaan (M. Goodnow). Three pairs were observed singing and 1 female was seen carrying food at Church Pond Bog, Sandwich, 15 Jun 2008 (R.S. Ridgely), the first time this species was found there in visits extending back to the 1970s. A total of 42 birds were reported in summer 2009 including 16 at Pittsburg 17 Jul (M.G. Harvey).

Other potential breeding sites in the greater Lake Umbagog area where birds have been found include the Second College Grant 22 Jun 1999 (L. Deming *et al.*) and Cambridge 19 Jul 2001 (C.J. Martin). Two recent reports from the Pittsburg area are 20 Jun 2005 (E.B. Nielsen), and 3 there 8 Jul 2005 (B. Griffith). Since there is a significant amount of inaccessible appropriate habitat in northern Coos County and the species seems to be extending its breeding range south, there may be more breeding birds present than have been documented.

Fall. Only a handful of published records at this season of birds specifically noted as the yellow form, concentrated in October. Nearly all reports are from the Connecticut and Merrimack River valleys between extreme dates of 13 Sep 1952 at New Hampton (V.H. Hebert) and the latest known at Hanover 5 Dec 1957 (E.H. Sherrard). Other records include Hampton 7 Nov 1954 (K.C. Elkins), Star Island 5 Oct 1974, and 3 Nov 1974 (ASNH field trips), and a most unusual count of at least 30 at Freedom 14 Oct 2008 (G.C. and A.E. Robbins) specifically identified as this form.

Taxonomic note. The “Western” form of Palm Warbler, nominate *S. p. palmarum*, is a regular fall migrant in moderate numbers; very rare in spring. Since it occurs annually, a full profile is provided here based on reports specifically of this form. Unfortunately, many reports of Palm Warblers do not indicate the form in the published record.

Early reports to 1950. One collected at Shelburne 16 Sep 1884 (Chadbourne 1885) and 1 found occasionally by

Allen (1903) at Intervale 8–14 September near the time of writing. Allen (1903) discounted a spring record at Manchester on 9 May 1900 by Abbott (1906). Brewster only found it twice in fall in New Hampshire at Lake Umbagog: 17 Sep and 9 Oct 1888 (Griscom 1938). Wright (1911) found 1–3 birds per year in the Jefferson region 1904–1910 between extreme dates of 10 September and 4 October. Shelley (1931b, 1934e, 1936a) reported it in the Connecticut River valley at East Westmoreland 14 Apr 1931, 25 Apr 1933, and 8 May 1935, just where it would be most likely to occur according to Galbraith *et al.* (2010), these being the first known spring records of this form. Only 5 fall reports were made to RNEB 1936–1949 ranging from 2 Sep 1945 at Freedom (C.S. Robbins) to 28 Oct 1945 at Monroe (R.B. Emery); the others were all in the third week of September.

1950 to present. Reported as a fall migrant and very rare winter lingerer, very rare in spring.

Spring. The first reports at this season since 1935: 2 separate birds on the coast at Hampton 27 Apr 2011 (S.R. Mirick, L. Medlock, J. O’Shaughnessy) (color photo on NHBR 30 [1] back cover), 3 at Hinsdale 5 May 2011 (K. Klapper), and 1 at Lee 16 May 2011 (S. Young).

Fall. This form arrives earlier than the main migration of the “Yellow” form and constitutes a significant percentage of fall individuals reported, particularly in the coastal region. The earliest arrivals come from the west by mid- to late August: New Hampton 16 Aug 1956 (R.W. Smart) and Manchester 21 Aug 1980 (M.T. Martin). It is 1 of the last fall transient warbler species to arrive in numbers; peak migration period is typically the last week of September and the first 2 weeks of October. Though usual daily numbers are in the 2–5 range, high counts in the peak migration period believed to be this form have been 30 at the coast 15 Oct 1992 (P.D. Hunt, I.J. Lovette), 35 at Sandwich 26 Sep 2000 (A.J. Vazzano), 75 at Jefferson 1 Oct 2000 (D. Govatski, C. Bretton), and 81 at Barrington 17 Oct 2007 (S. Young). Two banded at Star Island 12 Sep 1999 (R.W. Suomala), and about 10 there 30 Sep 2007 (E.A. Masterson *et al.*). All birds have usually left by the end of October. Latest reports are usually from the coast: 1 at Hampton 22 Nov 2007 (S.R. and J. Mirick), 1 at Rye 4 Dec 1993 (J.C. McIlwaine), 1 there 5 Dec 1998 (S.R. Mirick), 1 at Rye 14 Dec 2008 (E.A. Masterson), 1 at the coast 18 Dec 1993 (CBC), 1 at Durham 23 Dec 2006 (S.R. and J. Mirick *et al.*), and 1 at Hampton 29 Dec 2006 (P. Brown).

Winter. One at Rye 4–5 Feb 1989 (D.J. Abbott *et al.*) and 1 wintered at Rye 21 Jan to 5 Mar 2006 (S.R. and J. Mirick).

Pine Warbler *Setophaga pinus*

Status. Fairly common in the Merrimack River valley and

the southeast, uncommon in the western highlands, occasionally present in the northern Connecticut River valley and eastern Coos County.

Early reports to 1950. The earliest known state report is that of Little (1870) who found it in Warren. The Dwight collection contained 14 specimens taken at Hollis between 13 April and 18 August in the years 1875–1883 (AMNH #383126–383139). A specimen was taken at Bridgewater 21 Aug 1883 (Allen 1889), it was a common summer resident in Manchester (Batchelder 1899), Goodhue (1877a) thought it an uncommon migrant and summer resident at Webster, and Dearborn considered it a common seasonal migrant but scarce summer resident in Belknap and Merrimack Counties. Allen (1903) reported it to be a rather common spring and fall migrant and a summer resident, primarily south of the mountains but north to Ossipee, North Conway, Intervale, and Cornish. Brewster mentioned 1 as far north as Shelburne in Jun 1903 seen by W. Deane (Griscom 1938). In the south, Dearborn (1903) considered it a local summer resident near Durham, and Thayer (1912) found it rare at Dublin but nesting at Keene. In the Jefferson region a pair was found in an Eastern White Pine grove in 1899 and 1900 and 1 was heard in a similar pine grove in Whitefield in 1901 (Wright 1911), the northernmost points known in the Connecticut River valley at the time. It was a rare and local summer resident at Tilton with a first arrival 18 Apr (Perkins 1912). At Concord, White (1924b, 1937) called it a regular but scattered summer resident known between extreme dates of 3 Apr 1929 and 4 Oct in 1918 and 1923; he said its population had declined during the late 1920s but had recovered by the mid-1930s.

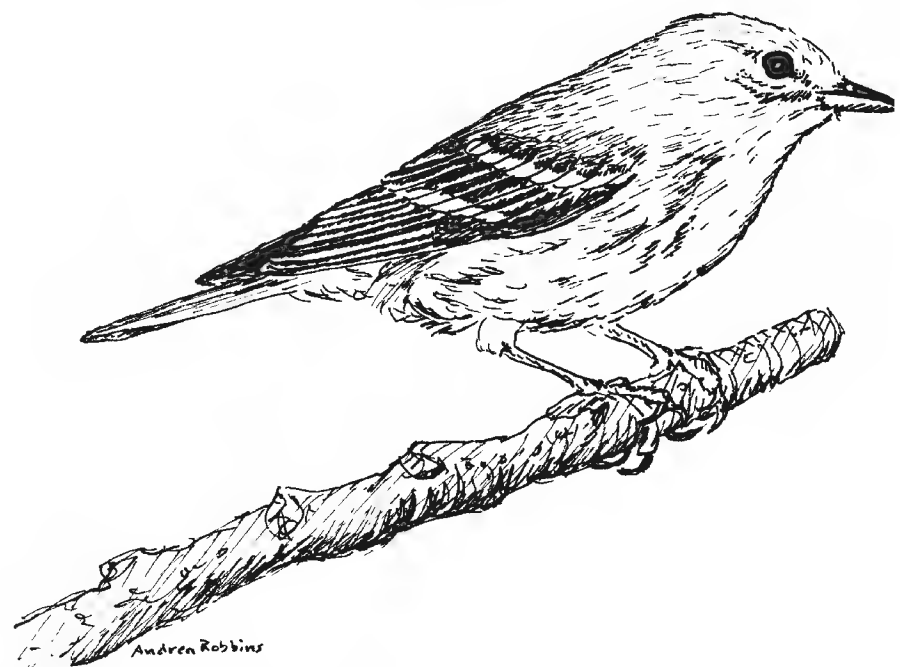
Only 13 reports were submitted to RNEB 1936–1949. Nine were first arrival dates from 5 Apr 1941 at Wilton (R.N. Lake) to the northernmost at Hanover 26 Apr 1943 (L. Forsyth); only 1 report was in fall: 5 birds at Hanover 24 Sep 1944 (L. Forsyth).

1950 to present. Numbers can be variable at the northern extremity of its range, but on balance it has expanded northward and its overall numbers have increased in hardwood and mixed forest (Hunt 2009b). It seems to be limited in its elevation, as is the Eastern White Pine (R.A. Quinn pers. comm.).

Spring. Earliest known arrival is at Lee 2 Mar 2003 (C. Fisher), possibly a bird overwintering nearby; otherwise the earliest records are Windham 27 Mar 2004 (J. Romano) and twice on 28 March. First spring arrival dates have been getting earlier: 1950–1980 mean first arrival was 14 April while the 1981–2006 mean was 1 April. Since 1950 the great majority of first arrivals have appeared in the Merrimack River valley with a few on the coast and very few in the Connecticut River valley. Representative recent daily counts have been in the 1–5

range; peak counts are 27 at Nottingham 15 Apr 2000 (A. Delorey *et al.*) and 27 at Concord 26 Apr 2009 (R.A. Woodward).

Summer and breeding. This species is an obligate nester in Pitch Pines *Pinus rigida* and Eastern White Pines and breeds early (Dunn and Garrett 1997). Since 1950 its range has extended north. By 1960 it summered in Hanover (Weber) and Conway (T. Richards). By 1975 it had reached Shelburne 11 Jun (T. Richards); and by 1978–1980 it was summering in Littleton (R.J. Bradley). By the 1990s it was well north of the mountains at Lancaster 20 Jun 1997 (R.A. Quinn) and 2 were at Metlak Island, Lake Umbagog, 19 May 1996 (C.J. Martin). It is a common summer resident up to 1500–1700 feet in the Squam Lake region (Ridgely 1988). New Hampshire BBS showed a significant increase 1966–1987, and the *Atlas of Breeding Birds* project 1981–1986 showed it breeding in most priority atlas blocks in the southeast quadrant of the state north to the mountains, sparingly in the western



highlands, and infrequently in the Connecticut River valley (Foss 1994). The highest elevation known for breeding is 1230 feet (Foss 1994). High breeding season counts include 21 at Concord 4 Jul 2005 (R.A. Woodward) and 10 at Nottingham 17 May 2003 (A. Delorey *et al.*); a surprisingly late breeding record was of a pair with 4 young at Gilmanton Ironworks 1–31 Aug 1964 (W. Widger). Nationally it has been increasing 1.2% per year (1966–1996) but it has grown 8.3% per year in New Hampshire and 8.2% per year in northern New England in that period (Rodewald *et al.* 1999). New Hampshire BBS population trend data show an average increase of about +6.2% per year in 1966–2009 and 1999–2009 (Appendix IV). The New Hampshire increase is likely related to the fact that the state is in the northeast corner of the Eastern White Pine's range (Sibley 2009).

Fall. Postbreeding wandering could occur in early July as 1 in Canterbury 1 Jul 1995 (R.A. Quinn) where it was not

known to breed. Migration begins as early as late July, often peaking in late September and ending by late October with lingerers into winter (Dunn and Garrett 1997). Very early migrants or a dispersing family group were 5 in Plymouth 28 Jul 1999 (J. Williams) and migrants are regularly noted by 11–20 August. High fall counts are 34 at Ossipee 25 Aug 2009 (A. and G. Robbins), 25 at Hopkinton 1 Sep 1994 (R.W. Suomala), 17 at Plymouth 24 Sep 2003 (J. Williams), and 16 at Hanover 26 Sep 2003 (S. Sturup). Extreme dates for Star Island, where it is very rare, are 11 Sep 1974 (R.S. Holt) to 30 Sep 2000 (R.W. Suomala). Birds are lingering later: in 1950–1980 there were 4 reports 8–31 October, in 1981–2009 there were 13.

Winter. There are more than 20 reports December through February, some of which have remained for weeks: 1 at Monroe 4 Dec 1953 to 1 Jan 1954 (I.F. Hunt), 1 at Laconia 4 Jan to 21 Feb 1995 (J. Flanders *et al.*), 1 at Hanover 7 Dec 2000 to 6 Jan 2001 (S. Sturup). Other winter records include Portsmouth 2 Jan 2006 (S.R. Mirick *et al.*), Bedford 15 Jan 1999 (E. Mario, J. Nelson), Stratham 26 Jan 2008 (S.R. and J. Mirick *et al.*), Jaffrey 13 Feb 1999 (M. Shannon), and Intervale 26 Feb 1989 (J. and C. Tewksbury). CBC reports include Lee/Durham (1982, 2008), Concord (1986), Nashua (1988, 2006), and the coast (1996, 1997, 2004).

Yellow-rumped Warbler *Setophaga coronata*

Status. Common to occasionally abundant spring and, especially, fall migrant; widespread and common breeder statewide, though somewhat less common south of the mountains.

Early reports to 1950. The “Yellow Rumped Tom Teet, *Parus virginianus*,” of Belknap (1792) surely belongs here, suggesting that it was probably a common forest bird in most of what is now New Hampshire during precolonial and colonial times. Brewster found it to be a very common summer resident and abundant fall migrant at Lake Umbagog 1871–1909 (Griscom 1938). Several other early writers thought it a northern species that only nested south to the White Mountains (Minot 1876, Allen 1903, Chapman 1907), and Dearborn (1898, 1903) never found it breeding in Belknap or Merrimack Counties or near Durham. The Dwight collection contained 10 specimens taken at Hollis, Campton Village, and Wolfeboro between 11 May and 5 September 1875–1885 (AMNH #381528–381537), the latter 2 locations being possibly within the species’ breeding range; the female collected at Hollis 25 Jun 1883 was considered far south for late June (Fox 1884). Howe (1901–1903) thought it a rather common summer resident at Bridgewater. Dearborn (1903) observed a very early migrant or possibly an overwintering bird near Durham on 5 March and considered it an abundant fall migrant there. Thayer (1912) considered it

a common summer resident breeding in the Monadnock region, rare below 1500 feet elevation, between extreme dates of 18 April and 30 November. In the Jefferson region Wright (1911) called it an uncommon summer resident at lower elevations but fairly common at higher elevations and an abundant fall migrant. Goodhue (1877a) was not sure it bred at Webster and White (1924b, 1937) thought it an uncommon and very local breeder near Concord. Scott (1921) still had no breeding evidence in the coastal region though it was an abundant migrant there.

Reports submitted to RNEB 1936–1949 provide early spring arrival dates of 14 Apr 1945 at Hanover (L. Forsyth) and 22 Apr 1949 as far north as Colebrook (D.W. Brainard). General arrival was 21 April to 3 May and peak migration period the middle 2 weeks of May. Peak spring counts were 86 on 3 May, 114 on 9 May, and 60 during 18–24 May 1942 at Hanover (all M. Choukas *et al.*). First fall migrants south of breeding areas were found in the first week of August, peak migration period was the last 3 weeks of September, and all birds were usually gone by the last week of October. Latest fall records were 13 Nov 1938 at Manchester (E.J. Goellner) in the Merrimack River valley and 26 Nov 1947 at Monroe (I.F. Hunt) in the Connecticut River valley.

In summary, it would appear that this species’ range probably included most of the state in colonial times, withdrew to the north during the period of deforestation 1750–1880s, and extended its range southward again as reforestation occurred, reaching the latitude of Concord by the 1920s.

1950 to present. Continued southward extension of the breeding range, especially south of the White Mountains, probably related to reforestation in that area; population trend listed as stable by Hunt (2012). The first wintering records reported.

Spring. Earliest spring arrivals are 1 at Kensington 9 Mar 1998 (G.W. Gavutis, Jr.), at Rye 11 Mar 2001 (S.R. Mirick), and at Greenland 18 Mar 2007 (S.R. and J. Mirick), unless they were overwintering birds not detected until those dates. Mean first arrivals have been occurring earlier: 1950–1980 mean first arrival was 16 April and mean first arrival 1982–2008 was 8 April; in the 1997–2009 period 6 of the 10 first arrivals were 9 March–1 April while from 1950–1996 there were only 3 March arrivals. The first birds often arrive in the first 2 weeks of April, as much as 2 weeks before general arrival. Males tend to arrive before most females: peak flight of males was 24 April to 10 May with a mean of 2 May. Counts of males range from 20–100 and peak numbers have been 200 at Hanover 10 May 1961 (J.E. Cavanagh), 200 at Holderness 6 May 2001 (J. Williams), 332 at New Hampton 10 May 1961 (R.W. Smart, V.H. Hebert), 300 at Hollis 25 Apr 1993 (R. Andrews), and 500 at Nottingham 29 Apr 1995

(M. Suomala). The majority of females tend to arrive 12–21 May with a mean of 13 May; high counts include “155 females moving close to the ground” at New Hampton 10 May 1958 (V.H. Hebert), 400 at Concord 13 May 1956 (Zimmerman), 120 at Sandwich 14 May 2002 (A.J. Vaz-zano), and 200 at Lake Umbagog 17 May 1964 (V.H. Hebert). Latest spring migrants have usually passed through nonbreeding areas by the second week of May; latest known are “3 migrants” at Dublin 28 May 1964 (T. Richards) and 1 banded at Star Island 4 Jun 2000 (R.W. Suomala). One at White Island 24 Jun 1999 (D. Trested, T. Smith) was a very late migrant or a nonbreeding lingerer.

Summer and breeding. In the *Atlas of Breeding Birds* project 1981–1986, it was found in 92% of the priority atlas blocks in all parts of the state, most densely in Coos County and less frequently on the coastal plain. New Hampshire BBS data show a distinct rising trend from 20 to 30 birds in the late 1960s to over 100 in the 1990s (NHBR 13 [2]: 33), paralleling the same trend in the northeastern states generally (Robbins *et al.* 1986). Longer-term New Hampshire BBS population trend data show a modest increase (+1.4% per year) in 1966–2009 but a modest decline (1.5% per year) in 1999–2009 (Appendix IV). Breeding is concentrated from 1000 to 5000 feet elevation. A representative summer count is 43 pairs in the Pittsburg region in 1961 (R.W. Smart, V.H. Hebert). Ridgely (1977) found it a common breeder around Squam Lake, and Cohn-Haft (1995) considered it an abundant breeder at the Second College Grant.

Fall. The first southbound migrants are usually detected by the second week of August: at East Kingston 13 Aug both in 1978 and 1979 (D.W. Finch), Charlestown 16 Aug 1962 (W.W. Kidder), and 1 at Star Island 19 Aug 1999 (R.W. Suomala *et al.*). Highest counts are usually reached in the last half of September: 400 at New Hampton 30 Sep 1975 (V.H. Hebert), 500 at Pittsburg 23 Sep 1962 (V.H. Hebert *et al.*), and 1000 in the Pittsburg–Errol area 24 Sep 1962 (V.H. Hebert *et al.*). Numbers often continue high in October, especially at the coast: 600 at the coast 8 Oct 1961 (R.W. Smart, V.H. Hebert), 300 at Rye 6 Oct 1969 (L.G. and E.W. Phinney), 242 at the coast 1 Oct 1963 (V.H. Hebert), 230 migrating at Hampton 10 Oct 1965 (V.H. Hebert), and 150 on Star Island 12 Oct 1975 (D.J. Abbott, E.W. Phinney). Migrant numbers in the coastal region are lower in November and include 36 at Star Island 1 Nov 1970 (E.W. Phinney), 200 at Star Island 3 Nov 1968 (E.W. Phinney), 15 at Star Island 17 Nov (ASNH field trip), and 15 at Hampton 19 Nov 1972 (E.W. Phinney). Later inland reports include 1 at Hanover 29 Nov to 16 Dec 1952 (E.H. Sherrard) and 1 as far north as Littleton 26 Nov 1996 (R.J. Bradley).

Winter. The species was recorded in December in 44 of the last 54 years. Most records come from CBCs on the coast: high counts there were 114 on 26 Dec 1953, 83 on

27 Dec 1958, 67 in 1984, and 66 in 1997. It has been reported on 8 Isles of Shoals CBCs. Inland reports include Hanover 16 Dec 1952 (E.H. Sherrard), Tamworth 31 Dec 1959 (L. Cole), Manchester 31 Dec 1976 (W.A. Thurber), the 1969 CBC at Lee; the CBCs at Nashua, Laconia, and Keene during 1990–2004; 1 at Concord 24 Feb 2007 (M. Suomala *et al.*), and 1 as far north as Littleton 14 Jan 1997 (R.J. Bradley). Latest reports are 7 at Newington 18 Jan 1995 (M. Suomala), 10 at Star Island 1 Feb 1970 (R.W. Smart), 1 at Seabrook 4 Feb 2006 (S.R. Mirick), 1 at Kensington 20 Feb 2001 (G.W. Gavutis, Jr.), 1 at Plainfield 24 Feb 2002 (D. Crook), 1 at Rye 24 Feb 2001 (R.A. Woodward), 1 at Greenland 27 Feb 1999 (P.D. Hunt *et al.*), 1 there 27 Feb 2005 (I.C. MacLeod), and 1 at Kensington 28 Feb to 20 Mar 1999 (G.W. Gavutis, Jr.).

Taxonomic note. The local breeding form is nominate *S. c. coronata*, formerly known as “Myrtle” Warbler (AOU 1957). The western breeding form, *S. c. auduboni*, formerly known as “Audubon’s” Warbler, is a vagrant to New Hampshire and was formerly considered a separate species (AOU 1957). It rarely appears late fall to winter on the New England coast. It is very like *S. c. coronata* but males are slightly larger, have more yellow on the back of the crown, have more white in the wing-coverts, and have a bright yellow throat; females in nonbreeding plumage are arguably indistinguishable in the field. Four reports of males include 1 at Lebanon 16 Oct 1998 (P.D. Hunt), Rye from 24 Nov (D.B. and T. Donsker) to 7 Dec 2001 (D.J. Abbott), at Rye 4 times from 30 Nov 2005 through 5 Mar 2006 (all S.R. and J. Mirick *et al.*), and Newmarket 16–24 Jan 2009 (D. Arnold *et al.*).

There are at least 4 specimens of *S. c. auduboni* from MA. It occasionally hybridizes with *D. c. coronata* where their breeding ranges overlap. In addition, the *S. c. hooveri* race of the “Myrtle” form from the Pacific Northwest would surely be mistaken for *S. c. auduboni* if it appeared in the Northeast (see color photographs in Heinl and Piston 2009), and the *D. c. meridionalis* race of the “Audubon’s” form also from the Pacific Northwest has been collected in Connecticut and MA (AOU 1957). At least 10 records of *S. c. auduboni* from MA including 3 specimens (Veit and Petersen 1993) and “several” records for ME (P.D. Vickery pers. comm.). Two color slides now on file at ASNH in Concord and taken 2 Jul 1974 at the summit of Mt. Osceola by R. S. Ridgely show a bird with some characteristics of *auduboni*: “notably yellow throat (though paler than most *auduboni*) and a larger white area on coverts (though not as much as true *auduboni*)” [A. R. Keith *in litt.* from R. S. Ridgely 23 Nov 1981], most likely a *coronata* $\times$ *auduboni* hybrid.

Yellow-throated Warbler *Setophaga dominica*

Status. A rare straggler from the south; rarely found in winter, usually at feeders.

Early reports to 1950. One reported at Manchester 13 Jul 1939 (E.J. Goellner).

1950 to present. Single birds have appeared in every month from April to August, in October and in December occasionally lingering to February and once to April. There are 17 reports 1950–2005. Of these 17, 9 were in May–June, suggesting springtime migration overshoot which has been occurring increasingly in New England: over 75 records in MA 1954–2009 (Veit and Petersen 1993, BO database 2010), 9 accepted records in VT 1959–1997 (C.C. Rimmer pers. comm.), and over 30 records for ME (ME-BRC website, P.D. Vickery pers. comm.; see also Masterson 2005a).

Spring. Nine records: at Weare 30 Apr–20 May 1995 (M. and R.W. Suomala *et al.*), Hanover 3 May 2003 (M. Krenitsky), Deerfield 11 May 2003 (B. Griffith), New London 12 May 1993 (P. Curtiss), Walpole 11 May–13 Jun 1992 (S. Wheelock, P.D. Hunt *et al.*), Concord 12 May 1997 (R.A. Quinn *et al.*), East Kingston 13–14 May 1997 (D.W. Finch), by far the northernmost at Monroe 20 May 1989 (P. Powers, R.B. Emery *et al.*), and Thornton 28 Jun 1998 (D. Lievens).

Summer. Three reports: possible postbreeding dispersal individuals include Lebanon 18 Jul 1992 (P.D. Hunt *et al.*), Hampton 1 Aug 1979 (D.B. Kirwan), and Chichester 7 Aug 2000 (R.W. and M. Suomala).

Fall. Two reports: Hampton 5 Oct 1954 (B. Keenan) and Epsom 4 Oct 1977 (B.R. Ring, R. Ring). An Oct 1954 hurricane brought several birds to MA.

Winter. Three records: 1 at North Hampton 19 Dec 1981 (L. Morris, C.A. Federer), Derry 18 Dec 2000–22 Dec 2000 (K. and M. Metz *et al.*), and Dover 5 Dec 2004 to 2 Apr 2005 (D. Carr *et al.*; photo on cover of NHBR 23 [4]).

Taxonomic note. Based on photographs of the bird at Dover in 2004 and 2005 it is believed to have been of the race *S. d. albilora*, formerly known as “Sycamore Warbler.”

Prairie Warbler *Setophaga discolor*

Status. Possibly very rare or absent from New Hampshire in colonial times; meaningful numbers were first noted in southern New Hampshire between 1875 and 1900 during deforestation; it now breeds sparingly north to the Lakes Region. An uncommon migrant and a local breeding species; may be slowly extending its range northwards.

Early reports to 1950. The records for summer in Bethlehem (Minot 1875) and the report of 2 nests and an egg taken at Northfield about 1880 (Herrick 1883) were discounted by Allen (1903). The first certain state records are 3 taken in Hollis 23 Aug 1876, 4 Sep 1876 and 28 Jun

1884 (AMNH #383245–383247). Goodhue (1922) reported it breeding at Boscawen 25 Jun 1901 and 6 May 1902, and at Webster 1 Jul 1903. It was considered quite common in northern Hillsborough County (Farmer 1892b), and colonies were reported near Manchester (Batchelder 1901). Goodhue (1922) reported the same “Two little colonies...one at Manchester, the other at Bedford, in June 1901 where they seemed to be nesting.” Thayer (1912) collected 1 at Dublin in May 1909, the only 1 he ever saw there. At Concord, 1 was found 16 May 1925 (G.P. Milne), and White (1937) found his first 1 there 12 May 1927; a small colony persisted for a few years but then declined.

Few reports were submitted to RNEB 1936–1949. Reports were received about 1 or more colonies in the Manchester area 16 Jun 1937, 18 and 30 May 1938, 15 Jul 1938, 9 and 15 May 1939, and 17 Aug 1939 (all E.J. Goellner), and P. Wright noted in 1938 that it had “increased in recent years around Nashua, seems to be locally common in suitable habitat in southern Hillsboro County.” One was at Concord 23 Jun 1938 (P. Wright), at what was then considered far north in Andover 9–26 Jun 1940 (K.C. Elkins), even farther north at Freedom 2 Sep 1945 (C.S. Robbins), at Auburn 15 May 1948 (T. Richards), and by far the northernmost ever recorded at Dixville 18 May 1949 (F. Allen).

1950 to present. Has expanded its breeding area modestly in this period though some local populations have disappeared as its preferred scrubland habitat has matured. Population trend is listed as increasing by Hunt (2012).

Spring. Earliest known arrivals have been 25 Apr in 1992 at Windham (K. Metz) and in 2003 at Campton (C. Johnson; photo NHBR 22 [1]: 26). Mean first arrival date is 9 May. The first arrival dates have become earlier since 1950: 3 May was the earliest first arrival 1950–1959, 2 May was the earliest 1960–1986, and 25 April was the first arrival 1988–2009. Some first arrivals have occurred north of known breeding areas: Campton 3 May 1962 (F. Bowes) and Tamworth 13 May 1978 (M.N. Dodge). Spring peak counts include 7 at Lee 13 May 1964 (O. Earle), 10 at Concord 27 May 2004 (P.D. Hunt), and 11 at Windham 31 May 2003 (M.G. Harvey). Migration season is thought to be over by the last week of May and extreme late migrants cannot be distinguished with certainty from summer residents.

Summer and breeding. Its breeding range has extended northward since 1950, primarily in the Merrimack River watershed as far north as Franklin, Andover, and Alexandria with 1 record in Holderness, and in eastern New Hampshire in pine barrens at Madison and as far north as Albany and Conway, especially along power line cuts. National BBS data show the species declining somewhat in New England, but New Hampshire BBS data show no significant change 1966–1989 (Nolan *et al.* 1999) and

longer-term population trend data show modest increases in both 1966–2009 and 1999–2009, numbers that conflict with other sources of information (Appendix IV). In the *Atlas of Breeding Birds* project 1981–1986, breeding was indicated in most priority atlas blocks in the southeast quadrant of the state and was curiously absent from most of the lower Connecticut River valley (Foss 1994), though more recently the species was found north to Enfield 9 Jul 1995 (P.D. Hunt), with 2 as far as north as Shelburne 13 Jun 2000 (S.B. Turner). High summer counts include 14 at Chester 2 Jul 1994 (A. Delorey) and 6 at Keene 7 Jun 2004 (J. Smith).

Fall. Migration is protracted, extending variably from mid-August to the end of September and occasionally extending into November. Some birds may be southbound by late July but certain migrants have been detected by mid-August: 1 at Center Harbor north of known breeding localities 10 Aug 1980 (J.P. Merrill) and 1 at Star Island 16 Aug 1999 (R.W. Suomala). Peak migration season is often the middle 2 weeks of September with a high count of 6 at Windham 13 Sep 2003 (M.G. Harvey) and at Brentwood 9 Sep 2006 (T. Bronson *et al.*). All birds are usually gone by early October. Extreme latest fall records include 1 at Greenland 8 Nov 2008 (S.R. and J. Mirick), an adult female at Star Island 12 Nov 1972 (D.W. Finch, E.W. Phinney), and 1 at Exeter 16–17 Nov 1953 (D.W. Finch).

Black-throated Gray Warbler *Setophaga nigrescens*

Status. Vagrant from the western United States. Two records during fall migration, the first considered hypothetical only because fewer than 3 experienced observers were present. One at Charlestown 2–3 Nov 1972 (W.W. Kidder, G.L. Kidder), observed at 20 feet. The second report was 1 at Star Island 21 and 22 Sep 1999 (R.W. Suomala, J. Weldon, G. Stansfield; photos). At least 25 MA records from early September to early December but primarily mid-October to late November (Veit and Petersen 1993, BO database 2010). Five fall records for ME (P.D. Vickery pers. comm.).

Townsend's Warbler *Setophaga townsendi*

Status. Late fall vagrant from the west; 5 records.

1950 to present. All reports are from November and December; including single birds at Durham from late Nov at least to 7 Dec 1981 (C.A. Federer *et mult.*), at Odiorne Point in Rye 21 Nov 1993 (M. Resch), Bartlett early Nov to 29 Dec 1997 (E. and G. Ellis, D.J. Abbott *et al.*; see Abbott 1997), Rye 20–21 Nov 2005 (S.R. and J. Mirick *et al.*), and Westmoreland 7–16 Nov 2010 (K. Klapper *et al.*). At least 12 records for MA (Veit and Petersen 1993, BO database 2010) and 2 records for ME (P.D. Vickery pers. comm.).

Black-throated Green Warbler *Setophaga virens*

Status. Common migrant and summer resident widely distributed in the state.

Early reports to 1950. Considered a common and widespread breeder and an abundant to common seasonal migrant throughout the state's ornithological history from the White Mountains southward (Coues 1868, Goodhue 1877a, Dearborn 1898, Howe 1901–1903, Allen 1903, Dearborn 1903 and 1905, Marble 1907, Thayer 1912, White 1924 and 1937). The Dwight collection included 9 specimens from Hollis taken between 20 May and 6 September in the years 1875–1883 (AMNH #382162–382169). In the Lake Umbagog region, Brewster considered it only an uncommon summer resident and a regular migrant in small numbers 1871–1909, but by 1930–1936 G. L. Perry found it had increased there and was then common (Griscom 1938). Wright (1911) thought it a common summer resident and fall migrant in the Jefferson region, reporting 19 singing males on Mt. Starr King 9 Jun 1905 and 25 in a day between Jefferson and Mt. Washington foothills (no date given); his latest fall report was 10 Oct 1904. Allen (1903) reported the highest elevation of 3800 feet on Mt. Washington at Hermit Lake 20 Jun 1900.

Reports submitted to RNEB 1936–1949 include the earliest spring arrival at Manchester 26 Apr 1938 (E.J. Goellner), usual spring arrival in the 2–9 May period, and a peak count of 120+ at Hanover during that period in 1942 (M. Choukas). In summer 120 singing birds were along the trail from Carter Notch to the highway 24 Jul 1948 (R.P. Fox). In fall, peak migration period was the middle 2 weeks of September, peak count was 20 at Andover 23 Sep 1945 (K.C. Elkins), most birds were gone by the end of September, and stragglers were as late as 12 Oct 1945 at Hanover (W.E. Lanyon) and 27 Oct 1947 at Monroe (R.B. Emery, I.F. Hunt).

In summary, this species appears to have been common in the southern part of the state and to have increased in the northern part of the state from the 1870s to 1950. Since this species prefers conifers and mixed forest for nesting, the return of mixed forest in the northern part of the state since 1900 may have contributed to a small increase there (Foss 1994).

1950 to present. Breeding population considered stable since 1990 by Hunt (2009b).

Spring. Earliest known spring arrivals are at Hopkinton 19 Apr 1971 (H.W. Parker) and Merrimack 21 Apr 1963 (R.W. Lawrence). Mean first arrival date since 1950 is 28 April. The first arrivals often appear 1–2 weeks ahead of the peak spring migration period which is typically in the middle 2 weeks of May. Peak counts are 50 at New Hampton 10 May 1961 (R.W. Smart, V.H. Hebert), 28 at Jefferson 27 May 1997 (R.A. Quinn), 27 at the coast 9–

10 May 1965 (J.E. Cavanagh), and 26 at New Ipswich 18 May 1958 (C. Wellman). Most migrants have passed through by the end of May, latest dates being 1 at Star Island 6 Jun 1971 (ASNH field trip), Star Island 9 Jun 1975 (A. Delorey *et al.*), 1 at White and Seavey Islands 13 Jun 2001 and 21 Jun 2007 (both D. Hayward *et al.*), and a very late possible migrant or nonbreeder at Star Island 22 Jun 1982 (R. Coyle).

Summer and breeding. Ridgely (1977) reported it a fairly common but local breeder in the Squam Lake area, and Allison and Allison (1979) thought it still a common breeder in the Dublin area. In the *Atlas of Breeding Birds* project 1981–1986, breeding was reported from 87% of the priority atlas blocks including all of the northern and highland areas. However, it was less common in the lowlands and the 5 southern counties, possibly due to suburbanization or higher rates of Brown-headed Cowbird parasitism in that area (S.A. Staats *in* Foss 1994, Dunn and Garrett 1997). Though numbers fluctuated little in 1966–1988, longer-term New Hampshire BBS population trend data show little change in either 1966–2009 or 1999–2009 (Appendix IV). Some high summer counts are 22 at Lake Umbagog 1959 (V.H. Hebert *et al.*), 36 pairs at New Ipswich 1961 (C. Wellman), 27 at Pawtuckaway State Park in Nottingham 19 Jun 2000 (A. Delorey *et al.*), and 38 at East Inlet in Pittsburg 13 Jun 2002 (E.B. Nielsen). Cohn-Haft (1995) called it a common breeder at the Second College Grant.

Fall. Aside from an exceptional early record at White and Seavey Islands 26 Jul 2001 (D. Hayward *et al.*), first southbound birds could occur in the middle 2 weeks of August unless the following reports are of local residents: 8 at Sandwich 16 Aug 1999 (A.J. Vazzano, B. Bruni) and 12 at Jackson 19 Aug 1976 (F. Yates). By the last week of August through September, routine daily counts were in the 8–15 range 1950–1985 and have changed little since. Major migration period is the first 3 weeks of September when peak counts have been 70 at New Hampton 3 Sep 1960 (V.H. Hebert *et al.*), 56 at New Hampton 12 Sep 1961 (R.W. Smart, V.H. Hebert *et al.*), 52 at New Hampton 8 Sep 1959 (R.W. Smart), and an exceptional 200 at Pittsburg 23 Sep 1962 (V.H. Hebert *et al.*). Latest known for the Isles of Shoals is 2 at Star Island 21 Oct 2007 (E.A. Masterson *et al.*). All birds are usually gone by the end of October, but 10 laggards have been reported in November. Only 4 of these have been since 1980, the latest being 1 at Concord 29 Nov 1973 (T. Richards), 1 at Portsmouth 21 Nov 1982 (E.W. Phinney), and 1 at Concord 18 Nov 1979 (R.A. Quinn).

Canada Warbler *Cardellina canadensis*

Status. Common migrant and fairly common and widespread breeder. Estimated to be declining over its entire range at 4.2–5% per year (Conway 1999).

Early reports to 1950. Considered a common seasonal migrant and nesting species from the White Mountain foothills northward and in the western highlands around Mt. Monadnock by early writers (Coues 1868, Maynard 1871, Minot 1876, Allen 1903, Thayer 1912). Brewster found it a common spring but uncommon fall migrant at Lake Umbagog which increased from the 1870s to the 1890s (Griscom 1938). The Dwight collection contained 5 specimens from Hollis taken 25 May to 5 Sep in the years 1875 to 1882 (AMNH #384828–384829, #384831–384833) and 1 taken at Campton Village taken 20 Jul 1885 (AMNH #384830). Wright (1911) called it a common summer resident in the Jefferson area, recording 20–25 per day in June 1904–1910; his latest in fall was 24 Sep 1907. Allen (1903) recorded 1 at 3360 feet elevation at Carter Notch 21 Jun 1900.

South of the White Mountains, Goodhue (1877a) found it a common migrant but uncommon summer resident at Webster, as did Dearborn (1898) in Belknap and Merrimack Counties. Near Durham, Dearborn (1903) and Scott (1921) called it only a spring migrant, and at Concord White (1924b, 1937) considered it a local and uncommon breeder though a common spring migrant between extreme dates of 17 May and 4 June; he also noted that though it was common from 1920 to 1926, it had declined thereafter.

Relatively few reports were made to RNEB 1936–1949, those received suggesting some fluctuation in numbers and possibly some decline. A relatively late migrant, earliest report in spring was 7 May 1944 at Hanover (W.E. Lanyon), and most early arrivals were in the 5–18 May period. A relatively early southbound migrant, all birds were usually gone in fall by the second week of September, and latest report was 18 Sep 1947 at Monroe (R.B. Emery). Overall, this species' population seems to have increased from the 1870s to about 1930, after which it appears to have dropped.

1950 to present. Though declining overall (Hunt 2009b), still a regular spring and fall migrant and breeder in suitable habitat and may be increasing as a breeder in the coastal lowlands especially as habitat improves there for this species due to reforestation.

Spring. Earliest known arrivals are on 29 Apr at White Island in 1999 (D. Hayward, D. Wells) and at Exeter in 2009 (P. Chamberlin), usual first arrival being 4–14 May and peak migration period the middle 2 weeks of May. Most first reports come from the Merrimack River valley with a few in the lower Connecticut River valley and from the coast. Peak spring counts thought to be virtually all migrants are 18 at New Hampton 18 May 1962 (R.W. Smart, V.H. Hebert), and 25+ at Durham 25 May 1967 (A.C. Borrer). Latest reports of presumed migrants are 1 at White Islands 14 Jun 2000 (D. Hayward) and 5 at Rye 21 Jun 1959 (K.C. Elkins). A high late spring count on

the breeding grounds is 40 at Lake Umbagog 17 May 1964 (V.H. Hebert). Numbers of migrants reported in spring are typically greater than in fall.

Summer and breeding. Published counts (NHBN, NHAQ) in early June 1950–1965 fluctuated in areas where it was common, representative numbers being 40 pairs at Pittsburg, 30 pairs at New Hampton, 36 pairs at New Ipswich (1961), and 7 pairs in the Errol–Lake Umbagog region (1960). However a significant decline began in 1965 with a 25% decrease in statewide BBS reports by 1967; BBS total individual numbers in the 1970s were half those of 1966 and in the 1980s were half the 1970s numbers. Long-term New Hampshire BBS population trend data show an average of a 5.1% per year decline in 1966–2009 and 1999–2009 versus a regional drop of 3.7% and a national drop of 1.9% per year (Appendix IV). Even so, the *Atlas of Breeding Birds* project 1981–1986 indicated breeding in 79% of priority atlas blocks statewide including nearly all blocks in the northern half of the state, patchy evidence of breeding on the coastal plain and only modest breeding in the Merrimack River valley, the Lakes Region, and the lower Connecticut River valley. Breeding in the coastal lowlands appears to have become more widespread since 1900 (Foss 1994), as it has in eastern MA (Griscom and Snyder 1955, Veit and Petersen 1993). Ridgely (1977) considered it a fairly common breeder in the Squam Lake area but it has since become local and uncommon there (R.S. Ridgely pers. comm.), and Cohn-Haft (1995) called it a common breeder in the Second College Grant.

Fall. The first southbound migrants are usually detected by the first week of August, and peak migration period is usually the last week of August and the first week of September. Peak known count in this period is 20 at the coast 2 Sep 1967 (R.W. Smart). One at Star Island 19 Aug 1981 (J. Ginaven). All birds are usually gone by the third week of September; late northern records were at Pittsburg 20 Sep 1958 (V.H. Hebert) and 23 Sep 1961 at Pittsburg (M. Halberg *et al.*). Extreme late records were at Windham 3 Oct 2001 (J. Romano), at Gilmanton 4 Oct 1960 (W. Taber), at Chichester 4 Oct 1976 (M. Smith), and at New Hampton 5 Oct 1975 (R.C. Hebert), all in the Merrimack River valley. A late report for Star Island is 1 on 27 Sep 1997 (A. and B. Delorey *et al.*).

Wilson's Warbler *Cardellina pusilla*

Status. A regular though uncommon seasonal migrant and a rare summer resident in the northernmost part of the state. It appears to be declining as a migrant and breeder.

Early records to 1950. The first published report for the state is that of Goodhue (1877a) who thought it uncommon at Webster. The Dwight collection contained 2 spec-

imens taken at Hollis 22 and 24 May 1876 (AMNH #384646–384647). In the Lake Umbagog region, Brewster called it an uncommon spring migrant and very rare in fall 1871–1909 (Griscom 1938). Spaulding (1894, 1910) reported nesting at Lancaster 6 Jun 1894 and again in 1909. Allen (1903) mentions 1 at Warren 4 Jun 1895 and as late as 3 October (W. Faxon). Dearborn (1898) had no records for Belknap and Merrimack Counties, suggesting it was uncommon to rare there even as a migrant, and he knew it only as a rare spring migrant in the Durham area (1903) where he had but a single spring report 13 May 1900 (Dearborn 1900). Marble (1907) only found it a rare migrant from late August to early September at Crawford Notch. Wright (1911) called it a rare summer resident in the Jefferson region, a moderately common migrant in fall and an increasing breeder that colonized a recently-burned area 1905–1910; his extreme dates there were 8 Aug 1904 to 28 Sep 1907 and he recorded it up to 1100 feet elevation. Thayer (1912) thought it a fairly common spring migrant near Dublin. At Concord White (1924b, 1937) only mentioned it as an uncommon spring migrant between extreme dates of 9 May 1919 and 4 Jun 1926. Prest (1930) reported a migrant at Manchester 10 May 1930.

Reports were submitted to RNEB regularly and with increasing frequency 1936–1949. The earliest in spring was 1 at New Hampton 4 May 1946 (V.H. Hebert), usual first arrival was by 7–12 May, and latest migrant in spring south of breeding areas was on 2 Jun 1946 at Hanover (L. Forsyth). Possible breeding birds were at Pittsburg 26 Jun and at Dummer 27 Jun in 1948 (S.A. Eliot, Jr., *et al.*). Southbound birds were noted by the second week of August, peak fall passage was the middle 2 weeks of September, and latest fall record was 27 Sep 1944 at Andover (K.C. Elkins).

1950 to present. Some evidence of a modest decline in total number of transients in this period. Breeding population listed as declining by Hunt (2009b).

Spring. Extreme early spring arrival is at Lebanon 22 Apr 2004 (D. Jorgensen) and peak migration period is the middle 2 weeks of May. Typical high spring counts 1959–1972 were occasionally above 10 with the extreme high count of 25+ at Rye 22 May 1972 (E.W. Phinney); in 1985–2008 high daily counts were in the 3–8 range with no counts over 10. Nearly all high counts were at the coast. Mean first arrival dates became earlier each decade: in the 1950s earliest arrival was 7 May, mean of all first dates 12 May; in the 1970s the earliest arrival was 5 May, mean 11 May; in the 1990s earliest arrival was 4 May, mean was 11 May; and in the 2000s earliest arrival was 22 April and mean was 10 May. Extreme late migrants were at Star Island 8 Jun 1972 (A.C. Borrer), at Durham 12 Jun 1994 (S.R. Mirick), and at Rye 21 Jun 1954 (K.C. Elkins).

Summer and breeding. This species is at the very southernmost part of its range in northern New Hampshire, and populations are prone to variation year to year. Surveys during breeding season suggest there have regularly been 1 pair or more at Pittsburg, the Errol–Lake Umbagog region, and possibly the Jefferson–Lancaster area from the 1950s through the 1980s. Very few were recorded on New Hampshire BBS routes in the 1960s and none were reported on BBS routes 1981–1984. New Hampshire BBS population trend data for 1966–2009 show a drop of 5.0% per year (Appendix IV). National BBS data show declines of 2.0% per year (Ammon and Gilbert 1999). During the *Atlas of Breeding Birds* project 1981–1986 there were only 2 atlas blocks with confirmed breeding plus 7 other blocks with probable or possible breeding, all in the White Mountains and Coos County (Foss 1994). In the 1990s, breeding season counts of 5–15 birds were reported from Pittsburg (v.o.), with others reported from the Errol–Lake Umbagog area (v.o.). Cohn-Haft (1995) thought it a rare and local breeder in the Second College Grant, noting a pair with young 30 Jun 1982. Ammon and Gilbert (1999) suggest that population increases may be associated with increases in deciduous scrub following logging. Since 2000 it has continued to be a local and uncommon breeder in the Pittsburg area.

Fall. Earliest known southbound migrant is 1 at Holderness 18 Jul 1998 (M. Trembly). Southbound migration is under way by mid-August, the northernmost resident birds typically leaving before those resident farther south. Many September late dates occur in the Merrimack River valley, but reports in October and November are primarily from the coastal region. Extreme dates for Star Island are 1 on 21 Aug 1999 (R.W. Suomala *et al.*) to 4 there 5 Oct 2007 (E.A. Masterson), peak count there being 9 banded on 3 Sep 2000 (R.W. Suomala). Extreme late dates known are at Concord 6 Nov 1962 (N. Struckhoff), at Rye 12 Nov 2001 (R.A. Woodward), at Durham 15 Nov 1980 (M. Davis *fide* R.A. Quinn), and 1 at New Castle 28 Nov 2010 (S.R. and J. Mirick; photo).

Winter. One on the Coastal CBC 17 Dec 1983 (D.J. Abbott, P. Vickery); see Stephenson (1984).

Painted Redstart *Myioborus pictus*

Status. Vagrant from the southwestern United States. Considered hypothetical for lack of 3 experienced observers, a photograph, or specimen. A male of this virtually unmistakable species was found at New Hampton 22–23 May 1981 (G.R. Wallace *fide* V.H. Hebert). There is a record from MA at Marblehead 18–19 Oct 1947 (Veit and Petersen 1993) and 1 in New York at Dansville from 25 Dec 1979 to 24 Jan 1980 (Spahn 1980). Through 1997, eastern extralimital records have also occurred in Wisconsin, Ohio, Michigan, Mississippi, Georgia, Missouri,

Minnesota, Louisiana, and Alabama, and in the province of Ontario (Curson *et al.* 1994, Dunn and Garrett 1997). This record has not been reviewed by the NHRBC.

Yellow-breasted Chat *Icteria virens*

Status. It is an erratic and very rare spring migrant and an uncommon fall migrant, rarely lingering into winter. Usually found near the coast, especially in fall and winter.

Early reports to 1950. Brewer (1878) reported a nest and 4 eggs found by C. A. Hawes surprisingly far north at North Conway in the summer of 1877, a record considered unlikely by Allen (1903) and not repeated by Goodhue (1922). The first certain record was a female found dead at West Concord about 6 Sep 1909 (Goodhue 1922) and added to his collection but the specimen cannot now be found. One was reported in RNEB at Penacook 29 Sep 1940 (J. Blackstone). The only known breeding report was 1 at South Hooksett (Bent 1953, AOU 1957), the date and observer not reported; an early spring date of 8 May of an unspecified year is attributed to L. O. Shelley at East Westmoreland (Bent 1953).

1950 to present. Rare spring migrant and regular but uncommon in fall, often lingering into early winter; may have overwintered twice. Also see Masterson (2001).

Spring. There have been 13 spring sightings ranging from 1 at Hampton 28 Apr 2009 (J. O'Shaughnessy *et al.*) to 1 at Dover 4–5 Jun 2002 (M. Suomala) with a mean of 23 May. Eight spring sightings have been at the coast; inland reports include Plymouth, Concord, Nashua (2), and Dublin. A bird at Plymouth 20 May 1982 (S.A. Fogleman) had an unusual pink-orange breast, the result of erythrism.

Fall. Late summer and fall records are thought to be post-breeding wanderers from the interior or farther south and are concentrated in the coastal region and the islands. Earliest arrival is 14 Aug 1994 at Newbury (P. Newbern) and most fall reports cluster from late August through October. There was a bulge in reports 1965–1973 (Masterson 2001) followed by another 1999–2000. Records from the Isles of Shoals include a combined total for 1999 and 2000 at Star Island of 29 banded between 16–31 August and 30 between 1–30 September (all R.W. Suomala), 1 seen at Star Island 1 Nov 1970 (D.W. Finch), and birds seen at White and Seavey Islands 20 Aug 2002 (D. Hayward). Inland fall reports in August are at Newbury, Canaan, Nashua, and New Hampton, and at Bristol 31 Aug 1976 (L.R. Emmons). The most northerly report known was 1 killed by a cat at Berlin 1 Oct 1999 (K. Dube, D. Killam). November inland reports include Concord 3 Nov 1976 (B. Clarner), Bristol 3 Nov 1992 (V.S. Wright), and Durham 11 Nov 1975 (C. Casas).

Winter. Chats were found between mid-November and early January 17 times 1951–2004. Four inland records

include 1 at Concord 27 Nov to 1 Dec 1961 (K.E. Dymment), 1 at Hancock 23 Oct to 5 Dec 1976 (H.M. Cadot), 1 “killed by a cat” at Gonic 10 Jan 1983 (*fide* A.G. Kuhn), and 1 at Laconia 16 Dec 1997 to 1 Jan 1998 (J. and P. Cownners, H.C. Anderson). More than 15 records exist from the coast, including on the Coastal CBC in 1969 and at the Isles of Shoals CBC in 2000. One found dead at Rye 7 Oct 1969 is now #4167-A in the UNH collection (A.C. Borrer). It has overwintered twice: 1 was at Rye mid-Nov 1951 to 17 Apr 1952 (Fernald) and 1 at Rye 23 Jan to 10 Apr 2002 (P. Wilson *et mult.*).

FAMILY EMBERIZIDAE

Green-tailed Towhee *Pipilo chlorurus*

Status. Vagrant from the west. Two records: 1 at North Haverhill 6–20 Dec 1978 (R. McKean, D.J. Abbott, S.A. Gonzalez *et al.*) and 1 at Keene 10–11 Dec 1992 (D. Maynard *et al.*). One accepted record from VT in 1990 (C.C. Rimmer pers. comm.), 2 records for ME (ME-BRC website, P.D. Vickery pers. comm.), and at least 11 records for MA (Veit and Petersen 1993, BO database 2010).

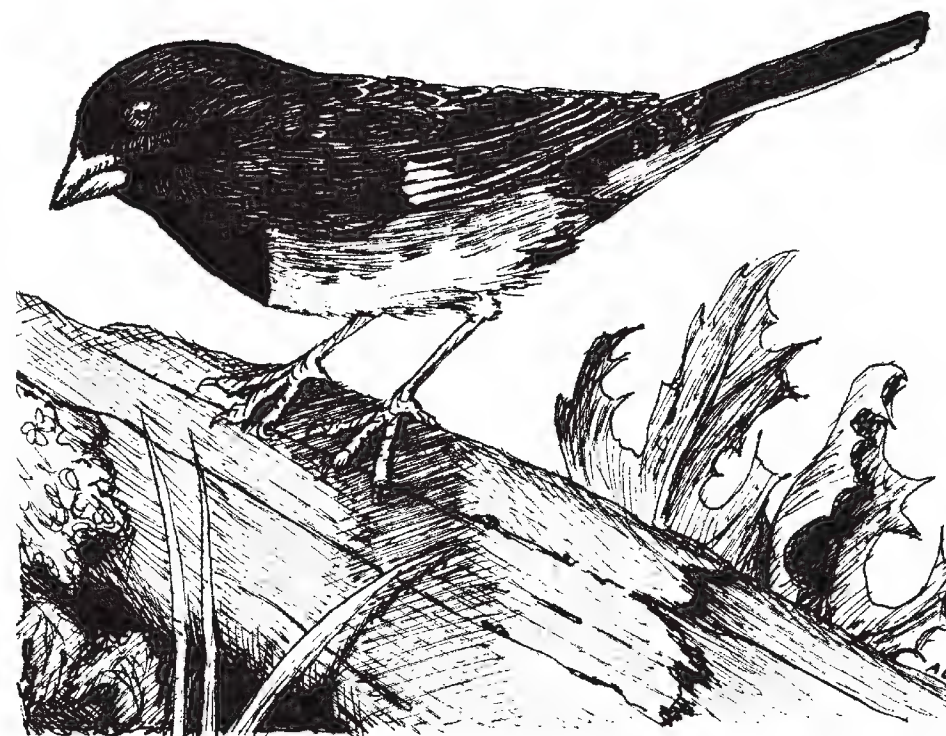
Spotted Towhee *Pipilo maculatus*

Status. Vagrant from the west. Three records. One appeared in Grafton in Nov but was not identified until 20 Dec 2003 (B. Taffe, J. Williams, G. Renee) where it remained until 17 Jan 2004 (I.C. MacLeod, E.A. Masterson, R.A. Woodward, D. Fallon). A second bird was found at Concord 14 Dec 2003 (M. and R.W. Suomala), was photographed 16 Dec 2003 (S.R. Mirick), and remained until 28 Mar 2004 (I.C. MacLeod, R.A. Woodward, D. Fallon). One was at Peterborough possibly from Jan but at least 3–20 Feb 2011 (C. Grummon, S. Motyl *et al.*; photo). There are at least 3 records for MA (Veit and Petersen 1993).

Eastern Towhee *Pipilo erythrophthalmus*

Status. Uncommon to common migrant and resident south of the White Mountains and in the 2 major river valleys; rare in winter. A major decline as a breeder since the late 1960s.

Early reports to 1950. The earliest known state report is that of Belknap (1792) who listed the “Cheeweeh, *Fringilla erythrophthalma?*” The first documented state records are a female collected at Hollis 10 May 1875 and a male collected there 9 May 1876 by J. Dwight (AMNH #367943–367944). Brewster only ever found it once at Lake Umbagog on 12 Jun 1880, but in ME (Griscom



1938). Goodhue (1877a, 1922) called it common at Webster as did Dearborn (1898) in Belknap and Merrimack Counties. Howe (1901–1903) thought it common at Bridgewater, and Dearborn (1903, 1905) considered it common to abundant at Durham and Northfield. Marble (1907) never found it at Crawford Notch, and Wright (1911) called it “accidental” as far north as Lancaster in the Connecticut River valley, having just 1 record there on 23 May 1907. It apparently did not occur north of the White Mountains in New Hampshire before 1900.

Allen (1903) considered it common north to the White Mountain foothills and as far north as North Conway in the Saco River valley. Thayer (1912) found it common at Dublin, and Lord (1918) reported its earliest spring arrival at Hanover on 8 May. White (1924b) called it common at Concord and (1937) gave its earliest known spring arrival there as 29 Apr 1897 and latest known in fall as 4 Oct 1932. Allan (1931) reported dates of 7 Oct 1939 and 11 May 1930 for the Isles of Shoals without stating in which state.

Reports to RNEB in 1936–1949 indicate it continued to be common throughout its range in the state. Earliest published spring arrival was 13 Apr 1941 at Wilton (R. Lake), second earliest being 25 Apr 1946 at Canaan (A. McAlister), and earliest near the upper limit of its range in the Connecticut River valley was 1 at Monroe 9 May 1950 (P. Powers). Last reported in fall was 1 at Greenville 12 Nov 1939 (J. Gregory), next latest being 1 at Durham 17 Oct 1942 (Mrs. Bisbee); latest in the White Mountain region was 1 at Lincoln 6 Sep 1950 (W.P. Smith). The first known winter record was 1 at Concord 4–9 Jan 1943 (F.B. White).

In summary, this species expanded greatly into southern New Hampshire during and after the period of deforestation from 1750 to 1900. It appears to have become com-

mon north to the White Mountains by 1900 and remained so until 1950.

1950 to present. Numbers increased steadily at the northern limits of the species' range in the state; it arrived earlier in spring, lingered later in fall, and wintered more frequently. By the 1970s, however, it began to decline in some areas as heavier forest returned (WAP 2005). Its breeding population is listed as declining by Hunt (2009b).

Spring. A bird surprisingly far north in the Connecticut River valley at Lyme on 19 Mar 1995 (S. Jenkyn) was either an exceptionally early migrant or had wintered nearby. Earliest known arrival of a bird thought not to have wintered is 1 at Concord 7 Apr 1971 (H.F. Everett), next earliest being 1 at Exeter 11 Apr 1954 (D.W. Finch). Mean arrival date in spring since 1965 is 15 April and general arrival is usually in the last week of April. An early arrival as far north as the White Mountains is 1 at Littleton 8 May 1960 (R.J. Bradley). Extreme dates for migrants at Star Island are 4 there 25 Apr 1965 (E.W. Phinney *et al.*) to 2 there on 6 Jun 1971 (ASNH field trip); peak count is 20+ there 11 May 1969 (ASNH field trip).

Summer and breeding. Primarily a shrub habitat species and sometimes found in pine barrens, it no longer occurs in areas that have grown up into forest where it was formerly common, such as parts of the Saco River valley and higher elevations on Mt. Monadnock up to 3000 feet elevation (E.C. Janeway *in* Foss 1994). The *Atlas of Breeding Birds* project in 1981–1986 found it widespread south of the White Mountains and to the northern parts of Grafton and Carroll Counties; breeding was confirmed or thought probable in 62 priority atlas blocks (Foss 1994). Northernmost documented breeding in the Connecticut River valley is an observation of a pair with 3 young at Littleton in Jun 1960 (R.J. Bradley). A single bird at Pittsburg in Jul 1952 (F.T. Scott) is the northernmost known state report. Statewide BBS data 1965–2003 show a significant decline from the 16–24 birds per route range in 1966–1972 to only 1–2 per route 1990–2003. Long-term New Hampshire BBS population trend data show a decline of over 10.0% per year for both 1966–2009 and 1999–2009 (Appendix IV). Power line rights-of-way are the most typical habitat for this species in many parts of the state today (R.A. Quinn pers. comm.).

Fall. Since 1950 birds have been regularly reported later in fall. General departure is typically in the first and second weeks of October, but extreme late migrant dates are now obscured by the presence of birds that regularly linger into early winter at feeding stations, especially in the southern parts of the 2 major river valleys and in the coastal region. It has been found on CBCs statewide only in 1999, 2000, and 2008–2009 (*vide* D.S. Deifik).

Winter. Now it is rarely present to February and March in southern New Hampshire. Has lingered as far north

as Littleton as late as 14 Jan 1970 (R.J. Bradley). First known successful wintering as far north as the Lakes Region was at Tuftonboro in 1959 (R.G. Carpenter II) and at Tamworth in 1961–1962 (H. Damon).

American Tree Sparrow *Spizella arborea*

Status. Common spring and fall migrant and regular winter visitor in variable numbers, especially from the Lakes Region southward.

Early reports to 1950. The “Winter Sparrow, *Fringilla grisea*,” of Belknap (1792) almost surely belongs here. J. Dwight collected males at Hollis 11 Feb 1876 (AMNH #403193) and on 13 Apr 1876 (AMNH #403194). Goodhue (1877a) called it common in winter and during migration at Webster. In the Lake Umbagog region, Brewster called it an abundant fall migrant but very rare in winter, his extreme fall dates being 9 Oct 1888 to 9 Nov 1904 (Griscom 1938). Dearborn (1898) thought it a common spring and fall migrant in Belknap and Merrimack Counties and regular there in winter in small numbers. In the Durham area and at Northfield, Dearborn (1903, 1905) called it a regular migrant southbound from late October to late November and northbound in April, only a few wintering.

Thayer (1912) considered it “fairly common” at Dublin as both a spring and fall migrant. Allen (1903) called it a “common spring and fall migrant and less common winter resident,” especially scarce in winter from the Lakes Region northward; his latest record for the northern Connecticut River valley was 1 at Lancaster 9 Dec 1899 (F.B. Spaulding). In the Jefferson area, Wright (1911) described it as common in spring and fall but rare in winter; his earliest fall arrival was 4 Oct 1904. White (1924b, 1937) said it was a common seasonal migrant in Concord but in winter its numbers were uncommon and variable with an occasional influx in February; his extreme dates there were 21 Oct 1918 to 30 Apr 1928. Allan (1931) reports birds at the Isles of Shoals 10 Nov 1929 and a late spring migrant 28 Apr 1930, the specific island not stated.

Forbush (1929) reported that “Mr. Stuart T. Danforth believes he found a nest of this species...late in May, 1916, in Temple...” and on “August 12, 1922, he found a pair of these birds apparently breeding...at Jaffrey” though no eggs or young appear to have been observed in either case. At this remove, there is no way to judge the likelihood of these remarkable and unique reports being accurate. Since Danforth was a trained and knowledgeable observer, confusion with either Chipping or Field Sparrows does not seem likely, but the present authors suspect an innocent *lapsus* on his part.

Reports submitted to RNEB in 1937–1949 period show it to have been a regular fall migrant especially in the last 2 weeks of October, earliest being 1 at Ossipee 5 Oct 1941

(E.E. Pratt), with most southbound migrants gone by early November. It was sometimes present in small numbers in winter. The earliest northbound migrant was found at Hanover 16 Mar 1943 (L. Forsyth), peak of spring migration was in the first 2 weeks of April, and latest known in spring was 1 at Monroe 14 May 1947 (I.F. Hunt).

In summary, the status of this species seems hardly to have varied in at least a century up to 1950.

1950 to present. Modest increase in the number of birds reported, especially in winter, though this may have most to do with more active bird feeders and better coverage.

Fall. Earliest fall arrival known is 1 on 28 Sep in 1958 at Littleton (R.J. Bradley) and in 2001 at Concord (T. Richards). Peak fall migration period is the last 2 weeks of October and the first week of November, peak count being 175 at Concord 4 Nov 2006 (R.W. and M. Suomala, R.A. Quinn), single-day counts of 100 being scarce. In most years many migrants have left by mid-November, though occasionally significant numbers linger into December: 448 in New Hampshire 19 Dec 1998 (Bellows Falls CBC). In recent years, statewide CBCs have occasionally totaled 1200–1500 birds in late December–early January; peak statewide CBC total is 2543 in 2003–2004. Two were at Star Island 25 Oct 1970 (R.W. Smart *et al.*).

Winter. In most years numbers present by late January are smaller than in late December and distribution is spotty statewide. An unusually high total of 256 was recorded at 8 locations 1 Jan through 22 Feb 2003 (v.o.), none of which were north of the Lakes Region. Sometimes by late February the first possible northbound birds begin to appear, and if departure is early in mild springs, peak numbers can occur in early March.

Spring. Typical peak spring migration period is mid-April but varies from late March to late April. Peak spring count is 360 at Gorham 13 Apr 1969 (V.H. Hebert) though single site counts over 100 are scarce. The last migrants usually leave by the last week of April, occasionally into the first week of May: 3 on White and Seavey Islands 2 May 2000 (D. Hayward, M. Charette). Latest known spring reports are 1 at Bedford 24 May 1962 (J.H. Kennard), and second latest is 1 at Tamworth 17 May 2006 (A.J. Vazzano).

Summer. One accepted report of a possible nonbreeding straggler: 1 at Enfield 23 Jun 2009 (L. Jones). One reported at Gilford on the unlikely date of 4 Jul 1970 (W.S. Lord) lacks documentation.

Chipping Sparrow *Spizella passerina*

Status. Common to abundant seasonal migrant and breeder statewide, uncommon to rare in winter.

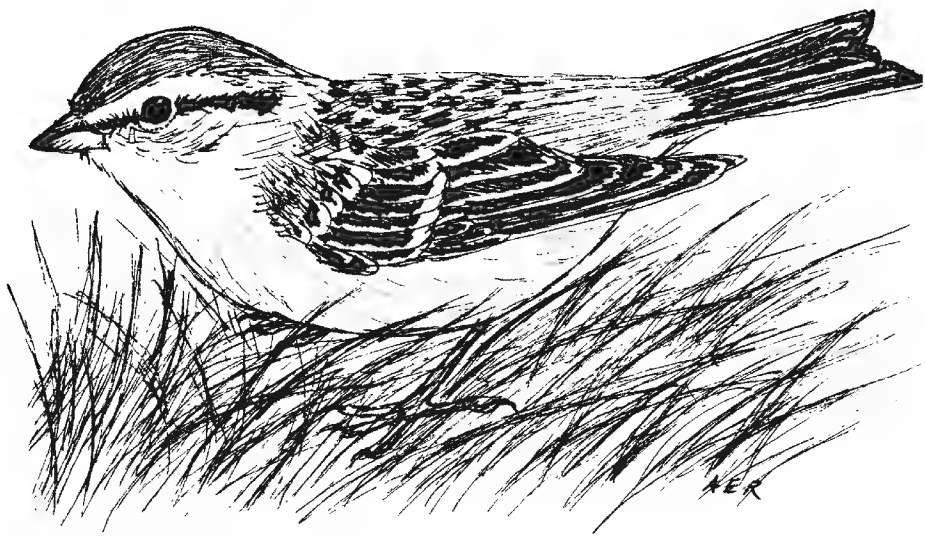
Early reports to 1950. The “Chipping Bird, *Fringilla?*” re-

ported by Belknap (1792) surely belongs here. This species was collected at Hollis by J. Dwight on 30 Jun 1876 and 25 Jun 1883 (AMNH #403353 and #403352 respectively). Goodhue (1877a) found it abundant at Webster, and Brewster found it common in cleared areas in New Hampshire near Lake Umbagog, a straggler there as late as 31 Oct 1884 (Griscom 1938). Dearborn (1898) thought it abundant in Belknap and Merrimack Counties as did Howe (1901–1903) at Bridgewater. At Durham, Danforth (1903) described it as very common, his extreme dates being 14 April to 31 October. Allen (1903) described it as a common summer resident in the Transition zone (“lowlands” of Foss 1994) statewide. Marble (1907) said it was not common but present at Crawford Notch.

In the Jefferson area Wright (1911) considered it an abundant summer resident, noting that it gathered in flocks of 50–100 in September and early October. Thayer (1912) called it abundant at Dublin. Lord’s (1918) earliest arrival at Hanover was 19 April and average was 22 April in 1912–1917. A bird banded at Sanbornton 18 May 1930 was recovered at Douglas, Georgia, 25 Dec 1930 (Weeks 1931). A bird was found at approximately 3000 feet elevation on Mt. Monadnock 17 Jul 1921, still the elevation record for the state (Whittle 1922a). At Concord, White (1924b, 1937) described it as abundant, his early arrival in spring being 17 April and his latest in fall 5 Nov 1920. At the Isles of Shoals, Allan (1931) found birds on unspecified islands 28 Apr 1930 and 7 Oct 1930.

Reports submitted to RNEB in 1936–1949 period include early arrivals in spring at Hanover of 8 Apr 1942 (L. Forsyth), but first appearance was usually not until the third week of April in most years and not until the first week of May (1948, 1949) as far north as Colebrook (D.W. Brainard). Peak spring migration passage was usually mid-May but could be as early as late April in mild early springs such as 1942 when 50 were at Hanover 21 Apr (L. Forsyth). In fall, flocks begin accumulating by mid-September and peak southbound migration is from the third week of September through the first week of October, flocks in the 50–100 range being unexceptional; high fall count known was 150 at Manchester 2 Oct 1939 (E.J. Goellner). The vast majority of birds had left by the third week of October, especially from the White Mountains northward, though a few sometimes lingered into the second week of November and 1 was collected at Gilford 16 Nov 1947 (S.G. Emilio). One lingered at a feeder in New Hampton 14 Nov 1948 to at least 1 Feb 1949 (V.H. Hebert), the first known wintering record.

In summary, this species must have become much more numerous in New Hampshire during the 1750–1875 period of deforestation as much more favorable habitat was created. Though it may have declined slightly in the early 1900s (Stull 1968), at least up until 1950 it was still com-



mon to abundant nearly statewide.

1950 to present. There was a moderate decline on the order of 10–15% as both a migrant and breeding species as reforestation occurred. However, it can still be considered locally common and appears to have been increasing at the edges of hardwood and mixed forest and in forest openings since about 1990 (Hunt 2009b).

Spring. Earliest known arrival is 18 Mar 2002 at Concord (M. and R.W. Suomala) and next earliest is 29 Mar 1998 at Gorham (J. Brown, J. Ely). Usual general arrival and peak migration passage period are the same as described above for the 1935–1950 period. Peak known spring count is 200+ at New Hampton 6 May 1962 (R.W. Smart *et al.*); recent high counts are typically in the 10–30 range.

Summer and breeding. This species breeds statewide, though the population is denser from the White Mountains southward and is more sparsely distributed in the northern Connecticut River valley and elsewhere in Coos County; generally absent from elevations above 2000 feet. That said, it was found in 159 atlas blocks (88%) as reported in the 1981–1986 *Atlas of Breeding Birds* (Foss 1994). New Hampshire BBS population trend data show a modest increase in both 1966–2009 and 1999–2009 (Appendix IV).

Fall. A postbreeding wanderer or early migrant at White and Seavey Islands 25 Jul 1999 (D. Hayward, D. Trested). Peak counts of migrants still cluster in the last week of September and the first week of October. Highest known count is 600 in the Pittsburg–Errol region 23 Sep 1962 (R.W. Smart, A.R. Keith), and between 1950 and 1965, counts in the 400–500 range occurred several times (1957, 1958, 1959, 1960). Since 1965, however, few counts even reaching 300 have been observed, and most fall high counts have been in the 50–100 range. A straggler was found as far north as Errol on 1 Nov 2001 (R.A. Quinn, T. Richards). There are more records of birds lingering into mid- and late November than before 1950. Perhaps due to a series of milder winters, and since the early 1970s, it has been found intermittently on CBCs in the southern part of the state and in the coastal region. Ex-

treme dates at Star Island are from 19 Aug 1981 (J. Ginnaven) to 16 Nov 1969 (O. Earle).

Winter. Inland reports as far north as the latitude of the Lakes Region are 1 at Canaan 1 Dec 2002 to 4 Jan 2003 (J. Granton, P. Benham), 1 at Northfield 18 Feb 2001 and again 31 Dec 2001 into early January 2002 (both P.D. Hunt), and 1 at Madbury 27 Feb 1999 (S.R. Mirick *et al.*). Birds have been found lingering into January occasionally but seldom stay to March. The few that do have been near the coast (Dover 1954, Durham 1963) and inland at Monroe (1967) and Concord (2002). One at Enfield 30 Mar 1997 (P.D. Hunt) is believed to have overwintered.

Clay-colored Sparrow *Spizella pallida*

Status. It is an uncommon visitor from the west in both spring and fall. First state record was in 1965 but it was reported more frequently 1990–2009: 16 times in spring and 19 times in fall (1.75/yr) versus a total of only 9 records 1965–1989 (0.39/yr). No suggestion of breeding yet.

Spring. Twenty records at this season. Earliest known is 1 at Star Island 14 May 1972 (D.W. Finch *et mult.*; photo); this and another at White and Seavey Islands 17 May 2002 (D. Hayward) are the only spring records for the Isles of Shoals. Extreme mainland dates have been 6 May 2011 at Hinsdale (K. Klapper) to 1 north at Haverhill 27 Jun 1996 (P.D. Hunt), 7 records in the coastal region and 13 inland. Eleven reports for May, 7 for June, and 2 that continued from June into July: 1 singing at Concord 14 Jun to 4 Jul 2006 (P.D. Hunt *et al.*) and 1 singing at Dover 23 Jun to 2 Jul 2008 (M. Suomala). Virtually all reports are at or south of the latitude of the Lakes Region, exceptions being the Haverhill record, 1 at Littleton 29 May 1983 (D. Sadler), and 1 at Plymouth 10–12 Jun 1981 (S.A. and W.W. Fogleman). One seen and heard singing at Seabrook 26 May 1971 (E.K.D. Lewis *et al.*) may actually have lingered there until the fall—see below.

Fall. Twenty-four records ranging from 1 at Stratham 16 Sep 2007 (S.R. and J. Mirick) to 1 at Concord 17 Dec 2006 (P. Brown *et al.*). There were 10 records in September, 10 in October, 2 in November, and 2 in December with 16 mainland coastal records and 8 inland. The 3 records for Star Island are 1 on 20 Sep 1992 (G. Lasley, P.D. Hunt *et mult.*), 1 on 24 Sep 1999 (R.W. Suomala, G. Stansfield), and 1 on 26 Sep 1993 (R.A. Quinn, S.R. Mirick *et mult.*). Only 2 north of the Lakes Region: 1 at Dummer 6 Oct 1969 (D. Briggs) and 1 at Conway 21 Sep 2005 (R.S. Ridgely). One seen at Seabrook 18 Sep 1971 (D.W. Finch, D.J. Abbott; photo) was in the same spot where 1 was found the previous spring and may have been present the whole time.

Summer records in northern New England began to increase around 2000, breeding was documented in VT in

2004, and in both MA and ME by 2009. Though breeding is not yet confirmed for New Hampshire, a singing bird in the summers of 2010 and 2011 in Newington was at least on territory (S.R. Mirick, L. Medlock *fide* R.A. Quinn).

Field Sparrow *Spizella pusilla*

Status. It is an uncommon and local summer resident and breeder, moderately common migrant, rare in winter.

Early reports to 1950. Five were collected at Hollis between 22 Apr 1876 and 18 Jun 1879 (AMNH #403756–403760). Goodhue (1877a) considered it common in Webster in summer. Dearborn (1898) considered it common in Belknap and Merrimack Counties, and in the Durham area and at Northfield (1903, 1905). Howe (1901–1903) found it a common summer resident in Bridgewater. Significantly, Marble (1907) did not record it from Crawford Notch. Allen (1903) considered it common in the southern part of the state, becoming “local and uncommon” in the White Mountains, but reaching the Saco River valley north to near Jackson and the Connecticut River drainage north to Jefferson and Randolph. He also reported an elevation record at “about 1,500 feet” on Spruce Mountain just north of Jackson.

Thayer (1912) found it common near Dublin April to September. Brewster had but 1 record in New Hampshire near Lake Umbagog, a single bird 12 Jun 1909. Wright (1911) reported that it was present in the Jefferson–Randolph area in 1889 (*fide* F.H. Allen) but that it then disappeared, only to have pioneer males appear 1902–1906 and nesting began 1907–1909 making it a rare summer resident. Lord (1918) considered it a regular migrant at Hanover 1912–1917 with both its earliest spring arrival and average arrival on 24 April in those years. White (1924b, 1937) thought it a “fairly common” summer resident at Concord between extreme dates of 17 Apr 1897 and 20 Oct 1920.

Reports submitted to RNEB in 1936–1949 include early arrival at Concord 28 Mar 1945 (V.H. Hebert) and spring arrival the first or second week of April. Northernmost report was 1 at Colebrook 1 Jun 1948 (L. Forsyth). In fall, primary migration period was mid-October and all birds were usually gone by the last week of October. Latest fall report was 1 at Manchester 2 Nov 1937 (E.J. Goellner).

In summary, this species’ distribution in the state never included extreme northern Coos County and it reached the latitude of Colebrook and Lake Umbagog only rarely. Even in the Connecticut River drainage, it only colonized the Jefferson–Randolph area periodically and was not found even in the White Mountain passes. From the Lakes Region southward it probably remained well established for a century up to 1950.

1950 to present. Little change in distribution; number of breeding birds has varied, especially at northern limit of its breeding range, but overall breeding population has declined moderately as shrubland habitat has matured into forest (Hunt 2009b).

Spring. Earliest published arrivals at sites where they were not known to winter are 1 banded at Nashua 7 Mar 1972 (J.J. Barry) and 1 at Newmarket 9 Mar 2006 (J. Hendrikx); these birds probably wintered somewhere nearby to arrive so early. Early arrival is usually in the last week of March and general arrival is not usually until mid-April. Peak spring migration period is typically the first week of May. Peak known spring count is 20 at Nashua 5 May 1963 (R. Murphy *et al.*). A migrant was at Star Island 25 Apr 1965 (ASNH field trip) and a late migrant at White and Seavey Islands 4 Jun 2001 (D. Hayward *et al.*).

Summer and breeding. Northernmost record for the state is a probable pioneer male at Pittsburg in Jun 1956 (H.C. McDade *et al.*), and the elevation record for the state is 1 at 2000 feet at Pinkham Notch in Jun 1968 (T. Richards). In 1981–1986, the *Atlas of Breeding Birds* project confirmed breeding or thought it probable in 72 atlas blocks, only 5 of which were north of the Lakes Region; the northernmost were near Monroe and near Gorham, both considered only probable (Foss 1994). One was seen at Pittsburg 10 Jul 2002 (E.B. Nielsen). However, the breeding distribution appears hardly to have changed in a century. New Hampshire BBS population trend data show a sharp decline to about an average of 8.5% per year in 1966–2009 and 1999–2009, faster than the 5.9% rate in the region (Appendix IV), probably due to habitat change as reforestation continues. Peak early summer count in a day is 16 at Chester 2 Jul 1994 (A. Delorey). By the late 1990s, daily numbers reported in summer had dwindled to single digits.

Fall. Some birds begin moving south by early to mid-September, and peak fall migration period is usually the last week of September and the first week of October. Peak fall count is 50+ at Plymouth 28 Sep 1973 (S.A. Fogleman). Migrants have been found at Star Island between 21 Sep 1975 (ASNH field trip) and 3 Nov 1968 (E.W. Phinney). Most birds are gone by the last week of October, but in recent years a few have lingered occasionally into early and mid-November. In very mild fall seasons, a few have remained until the CBCs in the coastal region or in the lower Merrimack River valley, much more rarely in the Lakes Region.

Winter. The first known winter report was 1 that lingered at New Hampton from Dec 1952 into 1953 (R.W. Smart) but such reports became occasional by the early 1970s and continue so to date in the southern part of the state. Many birds that occur through January probably do not survive into early March and disappear from feeders in February.

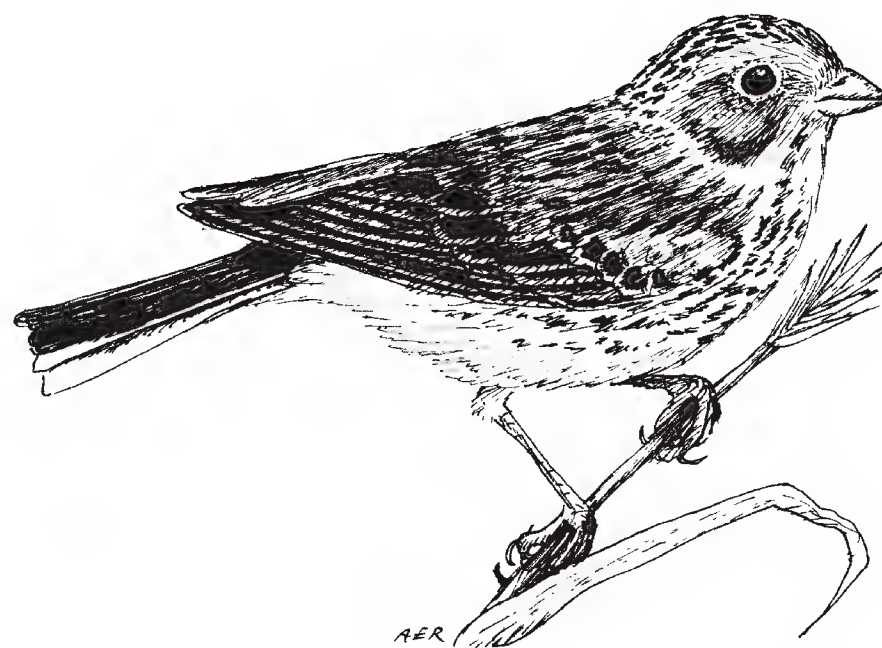
Vesper Sparrow *Pooecetes gramineus*

Status. It was formerly common and widespread, now a local and rare to uncommon migrant and breeder.

Early reports to 1950. The earliest known documented records for the state are a male collected by J. Dwight at Hollis 28 Apr 1875 (AMNH #401240), a male taken there 12 Apr 1876 (AMNH #410243), and a juvenile female taken there 28 Jul 1886 (AMNH #401242), the latter being the first proved breeding. Minot (1876) considered it common in the Conway–Bethlehem area, and Faxon and Allen (1888) also thought it common at Bethlehem, Franconia, and Holderness. An anonymous writer (1889b) reported 3 fresh eggs in a nest at Antrim 23 Aug 1888, the latest known nesting record. Goodhue (1877a) called it common in Webster, also breeding locally. Dearborn (1898) thought it an “abundant” resident from the first week of April to the end of October in Belknap and Merrimack Counties. At Bridgewater, Howe (1901–1903) thought it a common summer resident; at Durham, Dearborn (1903) considered it a common summer resident arriving in spring anytime between 31 March and 15 April; and at Northfield, Dearborn (1905) also described it as common.

Allen (1903) said it was then “a fairly common summer resident” of the Transition zone and cleared valley hill-sides up to 1500 feet in the foothills, nearly statewide. In the Lake Umbagog region, Brewster found it fairly common in cleared country in 1871–1909 (Griscom 1938). Marble (1907) found it nesting in Crawford Notch but uncommon there. Thayer (1912) considered it fairly common near Dublin from April to October, and Wright (1911) thought it a common summer resident in the Jefferson region, noting a flock of 25 there on 26 Sep 1908. At Hanover, Lord’s (1918) earliest spring arrival date 1912–1917 was 6 April and his average was 11 April. At Concord, White (1924b, 1937) considered it a common summer resident between extreme dates of 8 Apr 1918 and 24 Oct 1928. At the Isles of Shoals, Allan (1931) and Jackson (1947) report records on 2 Aug 1929 and 28 Apr 1930 respectively, the precise state not mentioned.

Reports submitted to RNEB in 1936–1949 indicate that it was still a common migrant and summer resident at Hanover: 34 there 14 Apr 1941 (L. Forsyth *et al.*) and 50 there 17 Apr 1951 (R.L. Weaver *et al.*). Earliest spring arrival and general arrival was 26 Mar 1944 at Hanover (R.L. Weaver); next earliest spring arrival was 27 Mar 1945 at Concord (V.H. Hebert). By the late 1940s, only a few birds were being reported in summer from places where they were formerly common. Usual peak spring migration period was the first 2 weeks of April. In fall, most birds were gone by mid-October; latest reported dates were 1 on 30 Oct 1948 at Monroe (K.C. Elkins) and 3 on 3 Nov and 1 on 7 Nov 1939 at Manchester (E.J. Goellner). The only report north of the White Mountains



in 1936–1950 was 1 at Milan 14 Oct 1950 (T. Richards).

In summary, there is much historical information that this species was a widespread and common breeder all the way to the northern part of the state at the peak of the deforestation period, presumably having expanded into appropriate habitat as the forests were cut from 1750 to 1880. It continued to be common until the late 1930s and 1940s when regrowth of shrub and woodland habitat began to replace pastures and grasslands in many areas and its numbers began to decline.

1950 to present. Continued decline as a breeder and migrant. Breeding population listed as declining by WAP (2005) and Hunt (2009b, 2012). A species of special concern in New Hampshire.

Spring. A bird at Durham 8 Mar 1973 (S.H. Smith, C. Boardman) is thought more likely to have wintered there or near there rather than being an early migrant. Otherwise, earliest known arrival is 30 Mar 1963 when 5 were at Newport (R. Coggeshall), usual arrival being variable but most often in the first week of April. By far the highest known spring migrant period count since 1950 is 20 at Jefferson 19 Apr 1964 (V.H. Hebert).

Summer and breeding. From 1950 to the mid-1970s, the number of breeding birds recorded dropped sharply. From 25 at Pittsburg 11 May 1958 (V.H. Hebert *et al.*) the number dropped to only 2 there in Jun 1972 (W.W. Kidder). Though the drop in numbers was not so dramatic in some other places, statewide numbers were clearly falling almost everywhere, and it is now very local as a breeder. In the 1981–1986 *Atlas of Breeding Birds*, breeding was confirmed in only 16 atlas blocks, all but 2 sites being south of the Lakes Region and widely scattered: 3 in the Connecticut River drainage, 7 in the Merrimack River watershed, and 4 in the coastal region. A thorough survey of suitable habitat in the southern part of the state revealed only 29 birds in Jun and Jul 1999

(P.D. Hunt). Long-term New Hampshire BBS population trend data show a decline averaging about 16.5% per year in 1966–2009 and 1999–2009 (Appendix IV). By 2008, there was a maximum of 5–6 pairs in the entire greater Sandwich area (R.S. Ridgely pers. comm.). Most birds have left breeding territories by late August to early September.

Fall. Southbound migration typically begins by late September and peaks by mid-October. Peak fall count is 163 seen in the Jefferson–Errol area 9 Oct 1960 (A.R. Keith, R.W. Smart, V.H. Hebert) on a day when there was a huge fallout of sparrows (see Dark-eyed Junco), next highest being only 47 in the same area 18 Oct 1959 (R.W. Smart, A.R. Keith). Most birds are gone by the end of October, a few lingering occasionally into the first week of November. Latest known fall records are 1 as far north as Pittsburg 15 Nov 1971 (E.W. Phinney *et al.*) and 1 at Durham 23 Nov 1969 (D.J. Abbott *et al.*). A late migrant was at Star Island 31 Oct 1970 (D.W. Finch).

Winter. Rarely lingers into early December. The first winter records are 1 at Bedford 22 Dec 1961 to 2 Jan 1962 (J.H. Kennard) and 1 at Derry 30 Jan to 7 Feb 1962 (D. Holm). Next were 1 at Litchfield 28 Dec 1969 to 4 Jan 1970 (M.G. Bouchard, D.J. Abbott), 1 at New Hampton 21–29 Dec 1970 (V.H. Hebert), and 1 in Charlestown 1 Jan 1971 (W.W. Kidder). The first record for the Coastal CBC was 1 there 20 Dec 1975 (D.J. Abbott *et al.*). Unrecorded in winter since the 1970s.

Lark Sparrow *Chondestes grammacus*

Status. Nearly annual fall visitor from the west; very rare in spring.

Early reports to 1950. The only known pre-1950 report for the state is of 2 seen at a distance of 30 feet at Webster 29 Apr 1929 by C. F. Goodhue (1922, additions up to 1930). Two early reports from the Isles of Shoals were both from Appledore Island, ME, that had to enter New Hampshire in order to reach or leave there: 1 in “summer” of 1934 (W.R. Eadie) and 1 of 2 seen that was collected 20 Aug 1936 (Wright 1937a, 1937b; Jackson 1947).

1950 to present. Most often found at the coast in fall but also inland both spring and fall.

Spring. At least 14 records between extreme dates of 1 inland at Keene 1 May 1972 (Mrs. J.H. Ward) to 1 on 15 Jun 1982 at Bridgewater (W.W. Fogleman). Other spring records inland are from Concord (1952, 1953), New Hampton (1958), Monroe (1964), and the northernmost at Franconia 18 May 1975 (M.L. Fuller).

Fall. At least 30 records at this season. Earliest known fall migrant is 1 at Star Island 12 Aug 1956 (ASNH field trip) and latest is 1 inland at Concord 28 Dec 1969 (N.B. Struckhoff). Usual fall occurrence is in the last week of

August and the first 2 weeks of September. Only 7 records after the end of October, either inland or at the coast.

Most fall birds have been found near the coast, but inland fall records have been at Whitefield (1962, 1964), Concord (1963, 1969, 1993), Jefferson (1965), New Hampton (1968, 1973), Littleton (1969), Keene (2004), and Monroe (1971); by far the northernmost is 1 at Pittsburg 1 Oct 1963 (V.H. Hebert). Seven Star Island records: 12 Aug and 19 Aug 1956 (H.C. McDade), 25 Aug 1999 (R.W. Suomala, K. Palfy), 26 Aug 1970 (W.H. Chisholm), 30 Aug 1953 (W. Taber), and 1 banded on each of 4 Sep and 14 Sep 2000 (R.W. Suomala).

Winter. One at Portsmouth 25 Jan 1994 (S.R. Mirick, S. Miller) and 1 at Durham 23–27 Dec 2000 (D.J. Abbott, S.R. Mirick *et al.*).

Lark Bunting *Calamospiza melanocorys*

Status. Vagrant from the west; 3 records. One at Twin Mountain in the southern tip of Coos County on 6 May 1965 (H.C. McDade), 1 at Bristol in the southern tip of Grafton County 22 Jul 1972 (V.S. Wright), and 1 at North Hampton 11 Oct 2008 (S.R. and J. Mirick; photo NHBR 27 [3]: 39). One accepted record for VT in 1984 (C.C. Rimmer pers. comm.); over 25 for MA, usually in September and October (Veit and Petersen 1993, BO database 2010); and 6 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Savannah Sparrow *Passerculus sandwichensis*

Status. Common migrant and uncommon but widespread breeder in appropriate field and pasture habitat.

Early reports to 1950. Though all of Brewster’s notes for the Lake Umbagog region are not published, since he described it as an “abundant summer resident” in New Hampshire “in the cleared farming country south and west of the Lake,” he surely found it on his first visit there in May and Jun 1871 (Griscom 1938). The first specific New Hampshire record appears to be that of J. Dwight who collected a female at Hollis 20 Apr 1875 (AMNH #399627) and a male there 16 May 1876 (AMNH #399628). Goodhue (1877a) failed to mention it at all, probably due to “inadvertence” since it surely was common in Webster at that time (Elkins 1960). Howe (1901–1903) called it an uncommon summer resident in the meadows near Bridgewater. Dearborn (1898) found it “tolerably common” in fields in Belknap and Merrimack Counties.

Allen (1903) thought it a common summer resident in appropriate habitat nearly statewide, “follow[ing] the cleared land well up into the hillsides” to about 1600 feet elevation in the foothills of the White Mountains. He also found a singing male at the summit of Mt. Washington

at 6288 feet 7 Jul 1898. Dearborn (1903, 1905) called it common in the Durham area and at Northfield; his extreme dates were from 18 April to 27 October. Marble (1907) considered it an uncommon summer resident in meadows near Crawford Notch, his latest in fall there being 27 Sep 1906. Thayer (1912) thought it uncommon at Dublin from April to October, noting that it bred there in “upland pastures and big alluvial meadows.”

Wright (1911) considered it a common summer resident in the Jefferson region, and Lord (1918) found it a regular migrant at Hanover 1912–1917, his earliest arrival being 9 April; average arrival was 17 April in 1912–1917. At Concord White (1924b, 1937) styled it a common summer resident between extreme dates of 5 Apr 1931 and 1 Nov 1920. Reports submitted to RNEB in 1937–1949 show it to have been a common migrant, typically arriving in the second week of April and leaving by the middle 2 weeks of October; an unusually late migrant was at Hanover 16 Nov 1939 (R.L. Weaver). Allan (1931) recorded 1 at the Isles of Shoals 30 Mar 1930 without indicating in which state.

It seems that the deforestation of New Hampshire that began by 1750 and reached its peak in the 1880s opened up large areas of habitat suitable for this species, and that as farm fields and meadows were abandoned subsequently, the range of this species shrank significantly in the state from 1900 to 1950, especially in the northern Connecticut River valley and other parts of Coos County where it had formerly been abundant.

1950 to present. Some continued decline as a breeding species due to reforestation and development but still locally common. Breeding population listed as declining by Hunt (2009b).

Spring. Earliest known spring report is 7 at Stratham 3 Mar 2007 (S.R. and J. Mirick), but this and other reports in the first 3 weeks of March are suspected to be of birds that overwintered rather than being true early migrants. Otherwise, mean arrival date is 8 April but has been slightly later than that since 2000. In milder seasons, general arrival can be as early as mid-April but in later springs may not be until the first week of May. Peak counts in spring are an exceptional 325 in the coastal region 18 Apr 1965 (R.W. Smart *et al.*) and 200 at Concord 18 May 2007 (E.A. Masterson); counts over 100 at this season are scarce. Extreme migrant dates at the Isles of Shoals are 29 Apr 2003 (D. Hayward *et al.*) to 1 at White and Seavey Islands 2 Jun 2006 (D. and M. Hayward *et al.*), peak count being 75+ at Star Island 14 May 1967 (R.W. Smart *et al.*). Late migrants are obscured by summering birds, but migration is usually finished by the end of May.

Summer and breeding. Numbers breeding in the state have declined since 1950 as the species’ preferred habitat has also declined (Ridgely 1977). During the *Atlas of Breeding Birds* project 1981–1986, breeding was con-

firmed or considered probable in 40 priority atlas blocks, primarily in Coos County, the lower Merrimack River valley, and the coastal region (Foss 1994). Long-term New Hampshire BBS population trend data show a very small decline in both 1966–2009 and 1999–2009 (Appendix IV). It was considered an uncommon summer resident and breeder near Dublin (Allison and Allison 1995). Twenty pairs were found in Pittsburg in Jul of 1961 in comparison to 13 pairs in 1999. A statewide survey of grassland birds in 1997 documented 300 Savannah Sparrows (P.D. Hunt), and 110+ were reported in a less comprehensive survey in 2005 (P.D. Hunt).



Fall. Individuals begin to move south by mid-September but major migration movement is typically in the first 3 weeks of October. Peak counts in this period are 500 at the coast 9 Oct 1966 (E.W. Phinney) and 500+ at Rye 2 Oct 1969 (L.G. and E.W. Phinney), though counts over 75 are unusual at the coast. In the interior, peak counts known for the Merrimack River valley are 450 at Concord 6 Oct 2002 (R.W. and M. Suomala) and 125 at Bedford 14 Oct 1967 (R.W. Lawrence) but counts over 100 are rare; peak count for the Connecticut River valley is 600 at Keene 29 Sep 2004 (J.P. Smith) though counts over 75 are unusual. Extreme migration dates for Star Island are 20+ 13 Sep 1964 (ASNH field trip) to 5 on 3 Nov 1968 (E.W. Phinney) with a peak fall count of 80 on 30 Sep 2007 (E.A. Masterson *et al.*).

Winter. Twenty-five were at Nashua 27 Dec 2009 (E.A. Masterson), and 1 at Plymouth 6–15 Jan 2001 (J. and R. Williams). Small numbers of birds have been found on CBCs at the coast almost annually since 1959 and some have successfully wintered there in recent years. The first bird known to have wintered in the interior was at Litch-

field in 1963 (Clement); few such records since: 1–3 on 3 Concord CBCs between 17 Dec 2006 and 3 Jan 2010 (R.A. Quinn), 3 at Walpole 24 Feb 2007 (L. Tanino *et al.*).

Taxonomic note. The local breeding race is nominate *P. s. savanna*, Eastern Savannah Sparrow, but the darker heavily-streaked Labrador race *P. s. labradorius* is surely an annual transient through the state in spring and fall and has been reported 3 times. Sight records of this form are treated here as hypothetical. A definitive photograph was taken at Chesham in Harrisville township 30 Oct 2010 (E.A. Masterson), the only documented record. Two birds believed to be of this race were seen among a flock of 9 Eastern Savannah Sparrows at New Hampton 7 Oct 1960 (R.W. Smart *et al.*), and 1 was seen at Seabrook 16 Mar 1975 (V.H. and R.C. Hebert). Brewster collected 1 of this race at Lake Umbagog 24 Sep 1890 just over the border in ME (Griscom 1938).

The distinctive pale form that breeds primarily on Sable Island, Nova Scotia, known as *Ipswich Savannah Sparrow* (*P. s. princeps*), was considered a separate species from Eastern Savannah Sparrow from its description in 1872 until 1983 (AOU 1983). It is a regular winter resident in New Hampshire with a strict preference for coastal dunes and most probably has been so for at least the last 200 years. Since it is easily separable from Eastern Savannah Sparrow by sight, we provide a full profile here.

Early reports to 1950. The earliest known reference to its occurrence in the state is that of J. A. Allen (1878) as reported by Dwight (1895). G. M. Allen (1903) thought it “doubtless occur[ed]...on the coast” but he had no specific records. Dearborn (1903) said it arrived “in the latter part of October and the last are usually gone southward early in December...They pass northward in March and April.” Two were seen at Seabrook 24 Oct 1931 (F.B. White), and 1 was at Hampton Beach 22 Oct 1941 (C. deWindt).

A published report of 1 seen at Lake Umbagog 9 Oct 1876 by N. C. Brown was not accepted by Dwight (1895) or by Brewster (1938) and was later withdrawn by Brown (1896). Shelley (1931b) reported 1 inland at Westmoreland in the lower Connecticut River valley that was seen on 20 Apr, 22 Apr, 25 Apr, and 2 May 1931; we treat this record as hypothetical for lack of other observers, photograph, or specimen.

1950 to present. It has been reported almost annually at the coast in this period.

Fall. Earliest known fall arrival is an adult carefully studied at close range 21 Sep 1968 at Rye (R.W. Smart). Next earliest are 1 at Seabrook 9 Oct 2009 (S.R. Mirick) and 1 at Hampton 10 Oct 1965 (K.C. Elkins). General first arrival is often not until the last week of October or the first week of November. Peak migration is the last 2 weeks of November. Occasionally it lingers until the Coastal CBC

but often is gone by year-end. Peak fall counts are 12 at Seabrook 12 Nov 1971 (E.W. Phinney *et al.*), of which 3 were trapped, photographed, and banded; and 10 at Hampton 5 Nov 2006 (S.R. and J. Mirick *et al.*). One was at Star Island 12 Oct 1975 (L.G. Phinney *et al.*) and 2 there 26–27 Oct 1970 (D.W. Finch). There appear to be only 2 reports away from the immediate shoreline dunes at this season. One was at the Exeter wastewater treatment plant 30 Oct 2009 (L. Medlock *et al.*; photo) and for several days thereafter, about 9 miles from the beach. The only documented far inland record is 1 photographed at Westmoreland 11 Oct 2010 (E.A. Masterson).

Winter. Numbers in the 1 to 6 range have been found at the coast in January and February, some of which have probably been wintering. One was at Rye 4 Feb 1962 (ASNH field trip), 3 were at Rye 4 Jan 1970 (R.W. Smart *et al.*), and 1 there 28 Feb 1970 (E.W. Phinney). Five were at Seabrook 8 Feb 1992 (S.R. Mirick), 1 at Seabrook 16 Jan 1993 (P.D. Hunt *et al.*), and 5 there 13 Feb 1993 (S.R. Mirick, P.D. Hunt). One was at Seabrook 20–28 Jan 2001 (S.R. Mirick *et al.*), 6 there 5 Jan 2003 (S.R. Mirick), and 1 at Hampton 2 Jan 2009 (E.A. Masterson *et al.*). There are reports of 8 birds through Jan and Feb 2010 (v.o.).

Spring. Earliest record of a bird thought to be a migrant is 1 at Rye 4 Mar 1972 (J.E. Cavanagh *et al.*), second earliest being 1 at Seabrook 8 Mar 1973 (J.E. Cavanagh), and 2 there 8 Mar 2009 (S.R. and J. Mirick). Usual spring migration period is last week of March and first week of April. One at Pease International Tradeport 21 Mar 2010 (M. Iliff) was about 5 miles inland from the shoreline dunes. Latest known spring record is 1 at Hampton Falls 18 Apr 1965 (R.W. Smart, V.H. Hebert).

Grasshopper Sparrow *Ammodramus savannarum*

Status. At the northern limit of the species range in New Hampshire, this species has declined from uncommon to rare and very local in the 1900s. A Threatened species in New Hampshire.

Early reports to 1950. The first published record for the state (Allen 1903, Cooke 1910) is 1 at Hollis 13 May 1876 (W.H. Fox). The first documented records are the 3 specimens collected by J. Dwight at Hollis, an adult male and female on 22 Jun 1876 (AMNH #400350–400351) and a juvenile female 18 Jul 1887 (AMNH #400352). Goodhue (1877a) thought it uncommon at Webster, possibly breeding. Dearborn (1898) thought it uncommon in Belknap and Merrimack Counties, having only a single report from near Tilton at the time of writing. Allen (1903) called it a rare summer resident in southern New Hampshire at Hollis and in the Connecticut River valley north to Walpole where it was observed in 1899 and 1900 (R. Hoffmann).

Dearborn (1903) considered it rare to uncommon and local in the Durham area and did not mention it (1905) for Northfield. Abbott (1906) reported it at Concord 4 Jun 1905 and at Pembroke on 1 Oct 1905. Thayer (1912) did not list it for the Dublin area nor did Wright (1911) for the Jefferson region. At Concord, White (1924b) considered it a rare summer resident, having collected a locally-raised bird 18 Jul 1923 at Penacook. Later, White (1937) described it as an irregular summer resident in small and variable numbers between extreme dates of 13 May 1932 and 5 Sep 1927; he reports a nest with 5 eggs at West Concord 29 Jun 1913 (F.M. Abbott), the earliest known breeding report for the state. Blaisdell (1934) reported a breeding pair at Goffstown in Jun and Jul 1933. Reports submitted to RNEB in 1937–1950 were primarily from the lower Merrimack River valley, principally near Manchester and Nashua, the northernmost being at Concord. There was 1 report from the coastal region, 3 singing birds at North Hampton 4 Jun 1939 (W. Taber), and for a few years (1940–1943) a cluster of records from Hanover in the Connecticut River Valley from mid-May to early July: 6 there 19 May 1940 and 4 there 6 Jul 1943 (R.L. Weaver *et al.*).

This species also must have benefitted from the period of deforestation 1750–1900 when pastures and grassland acreage was expanded greatly in the state. Nonetheless, the northernmost extent of its known breeding range was the Concord area in the Merrimack River valley and Hanover in the Connecticut River valley, and it was still local and uncommon to rare even where it occurred.

1950 to present. While always local and uncommon to rare, it has declined precipitously, especially since 1960 (WAP 2005). Breeding population listed as declining by Hunt (2009b).

Spring. Earliest known spring arrival dates are 1 at White and Seavey Islands 2 May 2003 (M. Barney, D. Hayward *et al.*), 2 at Concord 3 May 2005 (P. Brown), and 1 at Newington 4 May 2003 (M.G. Harvey *et al.*). Usual first arrival is in the second week of May: 14 May 1971 at Manchester in 1971 (H.W. Parker), at Concord airport 13 May 2003 (E.A. Masterson), and as far north as Lebanon 14 May 1972 (R.Z. Norman). Usual general arrival, when the species was more numerous, was in the last week of May. A late migrant was at Star Island 30 May 2009 (E.A. Masterson) but migrants later in June cannot be distinguished from summering birds.

Summer and breeding. In Jun 1951 it was discovered breeding in Meredith where it continued until 1953 (D.B. Holm *et al.*). It was also present in breeding season in most years through the 1950s and early 1960s at New Hampton, Concord, Manchester, Nashua, Keene, Walpole, Charlestown, Hampton Falls, East Kingston, Bow, Londonderry, and Lee. The northernmost probable breeding locality was at Lincoln where 2 singing males

were found 4 Jul 1965 and in Jul 1967 (R.J. Bradley *et al.*) and in Jul 1968 (R.W. Smart *et al.*). A single singing male at Jefferson 20 Jun 1966 (M. Dore *et al.*) is the northernmost report for the Connecticut River watershed. “In 1968, observers reported a total of 46 Grasshopper Sparrows at 7 sites in New Hampshire, including 25 at Grenier Airport, Manchester, and 12 at Boire Airport, Nashua” (R. Andrews *in* Foss 1994).

Since that time the breeding population has dropped such that in the 1981–1986 *Atlas of Breeding Birds* project, 1 confirmed site near Derry and 2 probable sites near Ashland and Nashua were all that could be found (Foss 1994). In 2006 at least 19 territories were found with at least 9 breeding pairs but very few documented fledglings in Swanzey, Concord, Londonderry, Manchester, Merrimack, Amherst, and Portsmouth/Newington. Twelve territories were in the lower Merrimack River valley, 2 were in Portsmouth/Newington, and 4 were in Keene (Hunt 2006). New Hampshire BBS population trend data show a modest decline of about 2.3% per year in both 1966–2009 and 1999–2009 (Appendix IV). This species tends to leave its breeding territory by late August.

Fall. Peak fall migration appears to be early to mid-September; highest fall count was 12 at Nashua 2 Sep 1969 (M.G. Bouchard). A secretive migrant, the remaining mainland fall records are scattered from 21 Sep 1999 at Wentworth (G. Ports) to 19 Dec 1998 at Stratham (S.R. Mirick *et al.*), most occurring in October. At Star Island, 8 records range from 1 Oct 1967 (ASNH field trip) to 2 on 16 Nov 1969 (E.W. Phinney *et al.*), of which 1 was trapped and banded.

Winter. One on 15 Feb 1956 at Concord (V. Hayden *et al.*).

Henslow's Sparrow *Ammodramus henslowii*

Status. Formerly it was very local and uncommon; it was extirpated as a breeding species by 1984.

Early reports to 1950. It was first recorded when collected at Webster 17 Apr 1874 by C. F. Goodhue who found it again at Boscawen 26 Apr 1875 and at Salisbury 16 Aug 1877. At Salisbury he found several pairs and 4 nearly fledged young in a nest (Deane 1878a). Goodhue (1877a, 1922) considered it an uncommon summer resident and breeder from the “last of April until late August” at Webster where he observed it every year from 1874 to 1922. Allen (1903) reports correspondence from G. H. Thayer saying that 1 August “several years ago” his father had shot 1 and saw 2 others in the Walpole hills ten miles northwest of Keene at about 1000 feet elevation, and that he himself had seen this species at Dublin in 1902 and at Hancock and Bennington. Allen (*op. cit.*) also relates observation of this bird “on one or two occasions” at Alstead (R. Hoffmann) and his own sightings 14–15 Jul 1899 of

a pair at Wonalancet “on the intervale at the foot of Mt. Passaconaway.”

Dearborn (1903) had no records from the Durham area and (1905) called it a scarce summer resident at Northfield. Thayer (1912) reported it as “[f]airly common in the big Hancock meadow” but only found it “once or twice” at Dublin. Cooke (1910) provided a record from Tilton on 17 Apr 1905. At Concord, White (1924b, 1937) thought it a summer resident “in small numbers,” a young of the year having been collected on 12 July in a year prior to 1924 and his latest in fall being 26 Sep 1924.

Reports submitted to RNEB in 1938–1950 period show it present at Andover in breeding season (14 May to 3 July) for most years (K.C. Elkins) and elsewhere in the Merrimack River watershed at Meredith 23 Jun 1950 (T. Richards). In the Connecticut River watershed, it was found at Chesham 18 Jun 1939 (W. Taber), at Canaan 28 Apr 1940 (A. McAlister *et al.*), and at New London 1 Aug 1949 (D.L. Kraus). What was probably a fall straggler was at New Hampton 23 Oct 1945 (S.A. Eliot, Jr.), the latest known fall state record.

1950 to present. Dwindling to none known breeding after 1983.

Spring. Earliest arrival is 6 May 1966 at Durham (A.C. Borrer *et al.*) and 22 May 1966 at Kensington (ASNH field trip). No other spring dates available.

Summer and breeding. Because these birds are so secretive around the nest, the presence of a singing male might mean the presence of a pair, but not necessarily. The last indications of possible breeding suggested by the presence of a singing male occurred in the 1950s with the very last evidence in 1983. Evidence was found in 3 areas: the coastal region, the lower Merrimack River watershed, and the lower Connecticut River watershed. Records in the coastal region came from 2 towns: 2–3 pairs at Exeter in 1953 and 2 pairs there in 1955 (both D.W. Finch) and at Newington 24 May to 5 Jun 1983 (T. Butler *et al.*), the last report for the state. In the Merrimack River watershed there were reports from 3 towns: at Concord on 6 Aug 1952 (V. Hayden) and a pair there in 1963 (H. Weber), at Danbury 26 Jul 1959 (V.H. Hebert *et al.*) and at Whiteface Intervale 2–8 Aug 1971 (R.S. Ridgely *et al.*). In the Connecticut River watershed there were reports from 3 towns: Chesterfield 15 Jul 1955 (T. Richards), Keene 10 Jul 1958 (T. Richards), and Walpole 16 Jul 1959 (T. Richards *et al.*).

Fall. The northernmost known record for the state was 1 caught by a cat at Waterville Valley 14 Sep 1952 (R.A. Woodward). There are 6 fall records from New Hampton: 4 Oct 1951, 3 and 4 Sep 1962, 19 Sep 1964 (all V.H. Hebert), and 7 and 23 Oct 1969 (both R.W. Smart *et al.*), the latter being the latest known fall record. Other late fall records are 1 at Charlestown 15 Oct 1967 (W.W. Kidder) and 1 at Exeter 19 Oct 1969 (R.W. Smart).

Le Conte’s Sparrow *Ammodramus leconteii*

Status. Vagrant from the midwest; 2 records. One photographed on White and Seavey Islands 16 May 2000 (D. Hayward, M. Charette; cover of NHBR 19 [1], spring 2000); 1 at East Conway 18 Oct 2008 (A.J. Vazzano, R.S. Ridgely). One hypothetical record from VT in 1988 (C.C. Rimmer pers. comm.); at least 25 records for MA (Veit and Petersen 1993, BO database 2010), and 5 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Note on “Sharp-tailed” Sparrows.

These species were separated based on published work by Greenlaw (1993) and Rising and Avise (1993) and were later listed by the AOU as separate species (AOU 1995). The form *A. nelsoni* now incorporates what were formerly the *subvirgata* (Acadian), *nelsoni* (Nelson’s), and *altera* (James Bay) races of the original *A. caudacutus*. Because the early published records for New Hampshire rarely specified the race involved, we have elected to treat all the old records as belonging to *A. caudacutus* unless another race is mentioned and the observer is thought to have been sufficiently knowledgeable to know the differences. Also, *A. caudacutus* is essentially restricted to coastal salt water habitat, so fall records on fresh water well into the interior are most likely the migrant forms *subvirgata* and *altera* and we have opted to treat them as *nelsoni* below.

The breeding zone of overlap between present *A. caudacutus* and *A. nelsoni* has recently been studied and expanded by Hodgman *et al.* (2002) and is now known to include the entire New Hampshire coast, though it is not known if this has always been the case. This makes it impossible to assign many, especially older, records to either species; by default we have assumed those records are of *A. caudacutus* for lack of a better alternative, realizing that may not be entirely true. *A. nelsoni* is unknown to nest in MA.

Nelson’s Sparrow *Ammodramus nelsoni*

Status. Locally uncommon migrant and breeder in the coastal salt marshes and occasional fall migrant in the interior. A species of Special Concern in New Hampshire.

Early reports to 1950. The only early reference that pertains to this species is that of Goodhue (1922) who states that birds of the Acadian race “appear to be regular migrants along the shore in fall...I have specimens taken at Hampton...in October;” he had no spring records. A presumed northbound migrant bird probably of this form was observed among other sparrows at East Westmoreland in the Connecticut River valley 13 May 1923 (L.O. Shelley) as reported by Bagg and Eliot (1937). White (1926) mentions 1 with the now obsolete generic name

of *Passerherbulus nelsoni subvirgatus* collected at Hampton by S. A. Shaw but on a date already lost. A report was submitted to RNEB of at least 2 thought possibly to be of the race *altera* at New Hampton “along the bank of the Pemigewasset River” 23 Oct 1945 (V.H. Hebert).

1950 to present. Occasional migrant and uncommon breeder at the coast, fall transient inland.

Spring and summer. Prior to the species split in 1993, only 2 records referable here: 1 at Rye 7 Jun 1964 (J.C. Wicks) and 5 at Hampton Falls 18 Jul 1967 (K.C. Elkins *et al.*). Since 1996 there have been increasingly regular and, more recently, annual reports from presumed breeding localities between 19 May and 28 August, all at the coast or around Great Bay at Stratham, Hampton, and North Hampton. First confirmed nesting was at Chapman’s Landing, Stratham, 19–20 Aug 1997 (S.R. Mirick, P.D. Hunt) where it continues to breed in small numbers. Also confirmed to breed in the coastal North Hampton marshes where it may be increasing. Since 1998, there have been 6 records of migrants at the Isles of Shoals between extreme dates of 25 May 1998 at White and Seavey Islands (S.R. Mirick) to 1 at Star Island 2 Jun 2000 (R.W. Suomala, K. Palfy).

Fall. This species has been found inland and at the coast, always in October, on several occasions. Inland records have occurred between 18 September and 23 October: single birds at New Hampton: 19 Oct 1951 (V.H. Hebert *et al.*), 8 Oct 1959 (R.W. Smart *et al.*), and 23 Oct 1960 (V.H. Hebert); 3 at Hanover 15 Oct 1954 (E. Holyoke *et al.*); 1 at Littleton 17 Oct 1971 (R.J. Bradley); 1 at Peterborough 3 Oct 1991 (R. Frechette); 1 at Keene 29 Sep to 2 Oct 2004 (J.P. Smith, S. Lerman); single birds at Concord 18 Sep 2007 (S.R. Mirick), 11 Oct 2008 (M. Suomala *et al.*), and 22 Oct 2008 (R.A. Quinn); and 1 at Westmoreland 13 Oct 2007 (E.A. Masterson *et al.*). One that appeared to be slightly injured was present at a feeder in Jefferson from late Nov 1983 to early Jan 1984 (D. Lennox, M.C. Ellis).

Fall coastal reports have occurred from 2 October to 15 November and have been annual since 1996. Only 2 known coastal reports before 1995: 1 at Rye 8 Oct 1961 with 3 typical-plumaged Saltmarsh Sparrows (R.W. Smart *et al.*) and 1 at Hampton 10 Oct 1963 (V.H. Hebert *et al.*). Peak counts since 1995 have been 8 at Hampton 7 Oct 1997 and 8 at Hampton 12 Oct 2003 (both D.B. Donsker *et al.*), 8 at Hampton 20 Oct 2001 (S.R. Mirick, J. Lawrence) together with 4 Saltmarsh Sparrows and 16 “Sharp-tailed” Sparrows of undetermined species, and 20 at Hampton 5 Oct 2007 (S.R. Mirick). Latest known in fall are single birds at Hampton 22 Nov 2007 (S.R. Mirick) and 24 Nov 2007 (B. Griffith *et al.*).

Remarks. Walsh *et al.* (2011) report on the extent of hybridization between this and the following species in the

zone of contact between the breeding ranges of the 2 species. Kovach and Walsh (2012) report further on the width of the zone of overlap of the 2 species and the degree of hybridization between them.

Saltmarsh Sparrow *Ammodramus caudacutus*

Status. Locally common migrant and breeder in the coastal salt marshes. A species of Special Concern in New Hampshire.

Early reports to 1950. Dwight (1887) stated that this species occurs north to Portsmouth. Dearborn (1903) stated that it was “common on the tide-water marshes” near Durham and “abundant” at Hampton; he found it as late as 14 October. Allen (1903) considered it a summer resident and reported that Brewster collected 1 at Rye 20 Aug 1869 (MCZ #200894). J. L. Peters collected 3 at Portsmouth on 4 and 7 Aug 1911 which he assigned to the race *caudacut[us]* (MVZ #128450–128452). Reports submitted to RNEB in 1938–1949 were several at Hampton Beach 26 May 1938 (E.J. Goellner) and 6 at Hampton 1 Jun 1949 (T. Richards).

1950 to present. Common seasonal migrant and breeder at the coast in appropriate habitat.

Spring. Earliest known spring arrival is 4 May 2005 at North Hampton (P. Brown) and second earliest is 1 at White and Seavey Islands 5 May 2001 (D. Hayward, A. LeFrancois). General arrival is usually in the last 10 days of May. By mid-June numbers in the 25+ range are routine. Migrants at Star Island, Isles of Shoals (where it does not breed), are single birds there 6 Jun 1970 (R.W. Smart *et al.*) and 9 Jun 1972 (A.C. Borrer). Birds either of this species or the previous 1 were at White and Seavey Island 5 Jun and 5 Jul 1999 (D. Hayward, D. Trested).

Summer and breeding. This species was found at Hampton River and Lubberland Creek in Newmarket by Hodgeman *et al.* (2002) in their 1997–2000 survey. “The Hampton salt marshes are still a stronghold for Sharp-tailed Sparrows, especially north of the causeway to Hampton Beach where approximately 500 a[cres] (202 ha) of lush and somewhat brackish marsh supported an estimated 200 to 300 nests during the 1985 breeding season...Sharp-tails are also common in the brackish marshes north of Depot Road, Hampton Falls. A few birds occurred in small colonies in sparser cover near the brackish upland edge of a better drained but more saline marsh north of the causeway to Seabrook Beach (Rt. 286)” (G.W. Gavutis, Jr., *in* Foss 1994). By 2005, it was restricted to 3 distinct breeding clusters: Great Bay, Rye, and part of the Hampton saltmarshes (WAP 2005). A survey of Hampton produced 134 birds 4 Aug 2008 (S.R. Mirick). Some birds are thought to begin leaving their breeding territories by the end of August: single migrants

were at White and Seavey Islands 12 and 23 Aug 2006 (J. Derrick, D. and M. Hayward respectively).

Fall. Many resident birds are thought to have left by mid-September but peak count including migrants is 20 at Hampton 5 Oct 2007 (S.R. Mirick) together with 60 other “Sharp-tailed” Sparrows of undetermined species. Latest known records at the coast are 1 at Exeter 2 Nov 1997 (S.R. Mirick *et al.*), 1 at Hampton 4 Nov 1998 (D. Deifik *et al.*), and 1 at Hampton 15 Nov 2008 (S.R. and J. Mirick).

Winter. Reports at this season from before 1995 are assumed to be this species though the possibility of Nelson’s Sparrow cannot be ruled out. One at Hampton Falls 7 Jan 1982 (A.C. Borrer, R.A. Quinn, T. Richards). All other known reports are from the Coastal CBC: 1 at Rye 18 Dec 1971 (A.C. Borrer *et al.*) and 1 on 16 Dec 1989 (A.C. Borrer *et al.*).

Taxonomic note. Montagna (1942) considered the local breeding form to be the race *A. c. caudacutus*.

Remarks. Walsh *et al.* (2011) report of the extent of hybridization between this and the previous species in the zone of contact between the breeding ranges of both species. Kovach and Walsh (2012) report further on the zone of hybridization of the 2 species and its extent.

Seaside Sparrow *Ammodramus maritimus*

Status. Rare and very local and now irregular summer resident of coastal salt marshes. A species of Special Concern in New Hampshire.

Early reports to 1950. Scott (1921) described it as only slightly less common in New Hampshire than the Sharp-tailed Sparrow, a claim that seems improbable from today’s perspective. Coues (1868) also claimed it was a common breeder on the New Hampshire coast, but his report was considered in error by both Brewster (1876a) and by Stearns (1887). There were no reports of this species to RNEB 1936–1949.

1950 to present. Earliest known spring arrival is 1 May 1999 at White and Seavey Islands (D. Hayward). To be expected from early May until at least early October. The first published records are of 1 at Hampton 20 Jul 1968 (R.W. Smart, H.C. Anderson), 1 at Hampton 27 Sep 1971 (P. deBenedictis), and single birds at Rye 8, 13, and 17 May 1976 (G.C. Robbins). A small colony of 6 to 8 pairs was found at Hampton 23 Jul 1985 (G.W. Gavutis, Jr.) and young were later seen being fed by an adult, documenting the first known breeding record for the state and then possibly the northernmost known on the Atlantic Coast. At the time this was the only known breeding site (WAP 2005), though it since has been confirmed breeding in southern ME. A report of a single territorial male at Rye Harbor in the summer of either 1984 or 1985 rep-

resents another possible nesting locality (*in litt* from E.W. Phinney to G.W. Gavutis, Jr., *in* Foss 1994).

Since 1990 it has been recorded almost annually. Over 20 records involving more than 35 individual birds have been found at Hampton between 26 May and 25 July, peak single-day counts being 4 at Hampton 26 Jun 1993 (S.R. Mirick, P. Lacourse) and 4 there 22 Jun 1996 (S.R. Mirick). One was at Stratham on Great Bay 25 Sep 2004 (D.J. Abbott *et al.*). A migrant was at White and Seavey Island 19 Aug 2001 (D. Hayward *et al.*). One was at Hampton 30 Sep 2001 (M. Patten). All birds have usually left by early October; very few November reports. Late reports in early winter are singles at Greenland on Great Bay 3 Dec 1994 (S.R. Mirick, D. Crook *et al.*) and at Hampton 4 Dec 1997 (S.R. Mirick). Latest known report is 1 at Hampton Falls 7 Jan 1982 (A.C. Borrer, R.A. Quinn, T. Richards).

Fox Sparrow *Passerella iliaca*

Status. Regular and moderately common spring and fall transient, rare in winter. Once documented to breed.

Early reports to 1950. The first certain state records are those of J. Dwight who collected 3 in Hollis 16 Apr 1875, 11 Apr 1876, and 8 Apr 1887 (AMNH #404639–404641). Goodhue (1877a) merely said it was “common in migration” at Webster. Brewster found it a regular fall transient at Lake Umbagog between extreme dates of 30 Sep 1889 and 27 Oct 1904 with a peak migration on 18 Oct 1882 (Griscom 1938). In Belknap and Merrimack Counties, Dearborn (1898) considered it common in March and April and in November. Allen (1903) called it a “rather common migrant” between extreme dates of 16 March to 23 April in spring and 5 October and 7 November in fall. Dearborn (1903, 1905) considered it a regular spring (April) and fall (November) migrant at Durham and Northfield.

Abbott (1906) reported 1 at Concord on 13 May 1902, the latest known spring record before 1950. Marble (1907) thought it uncommon at Crawford Notch in late September, and Thayer (1912) considered it a fairly common transient at Dublin. In the Jefferson region, Wright (1911) called it a rather uncommon spring and fall migrant, more numerous in fall between extreme dates of 29 September and 26 October. Lord (1918) reported the earliest in spring on 20 April and average first arrival of 2 May at Hanover 1912–1917, surprisingly late in comparison to other authors. At Concord, White (1924b, 1937) considered it a regular transient between 16 March to 28 April in spring and 12 October to 2 December in fall; he also noted the first known winter record in Jan 1928 (G.P. Milne). Allan (1931) reported 1 at the Isles of Shoals 2 Apr 1930, the precise state not noted; this is the only spring report known for the islands. Whittle (1931)

reported 1 banded at Hanover 5 Apr 1929 that was recovered at Pinetown, North Carolina, 20 Jan 1931.

Reports submitted to RNEB 1936–1949 show it to be a regular spring migrant between 15 Mar 1948 at New Hampton (V.H. Hebert) and 5 May 1950 at Randolph (J. Maddock). Peak migration period is sometimes as early as the last week of March; peak known spring count is 50 at Exeter 28 Mar 1947 (Mrs. N.L. Hatch). In fall, earliest known arrival in this period was 1 at Hanover 24 Sep 1944 (L. Forsyth) and latest was 1 at New Hampton 8 Dec 1948 (V.H. Hebert). The only winter record reported in these 14 years was 1 picked up dead at Concord 24 Jan 1938 (F.B. White).

In summary, the status of this species has apparently changed little since 1875 with perhaps some modest variation from year to year in numbers and in timing of passage. Increases in the number and expertise of observers have resulted in a widening of the spring and fall periods when it might be found in the state.

1950 to present. Continues as a regular, occasionally common, spring and fall transient, rare in winter.

Fall. Earliest fall arrival since 1950 is 27 Sep in 1962 at Tamworth (L.E. Cole) and in 1965 at Littleton (H.C. McDade *et al.*). Peak migration period is from the last week of October through the first 2 weeks of November. Peak known fall count is 51 at New Hampton 3 Nov 1963 (V.H. Hebert) but counts over 15 have become scarce since 2000. Most birds have usually left by the end of November or early December, though a few may linger into late December at feeders and appear on CBCs. Latest known report north of the White Mountains is 1 at Errol 7 Dec 1969 (R.W. Smart). A migrant was at Star Island 13 Nov 1966 (ASNH field trip).

Winter. Birds occasionally linger into mid-January, especially at the coast and the lower Merrimack River valley, but usually do not persist through all of February. Latest inland winter reports are single birds at Bow 21 Feb 1954 (G.P. Baker), Gilsum 29 Jan to 28 Feb 2001 (M. Wright), Alton 28 Feb 2007 (M. and R. Foster), Canterbury 28 Feb 1966 (N. diGiovanni), Nashua 29 Dec 1997 to 28 Feb 1998 (B. and M. Harris), Windham 25 Feb 2002 (J. Romano), and Hopkinton 13 Feb 2005 (T. Rocco).

Spring. Earliest spring arrival is 2 Mar 1995 at Monroe (P. Powers, E.A. Emery) and 2 Mar 2004 at Peterborough (M. Johnson), next being 1 in Gilsum 7 Mar 1995 (M. Wright). Peak spring migration period is usually in the last week of March and the first 2 weeks of April, varying somewhat with the mildness of the spring season. Peak spring count is 110 at the coast 8 Apr 1967 (E.W. Phinney *et al.*) though counts over 40 are scarce, and there are none since 2000 other than those that follow. Major snowstorm-induced fallouts occurred in 2007, totaling nearly 300 birds. They began 16 Mar in the coastal region

with a peak of about 75 birds on 18 Mar and a second peak 5–15 April with a high of about 42 birds on 6 April, mostly in the interior (see Bronson 2007 for detailed discussion of the event). Latest known spring migrant is 1 at Charlestown 6 May 1967 (W.W. Kidder *et al.*).

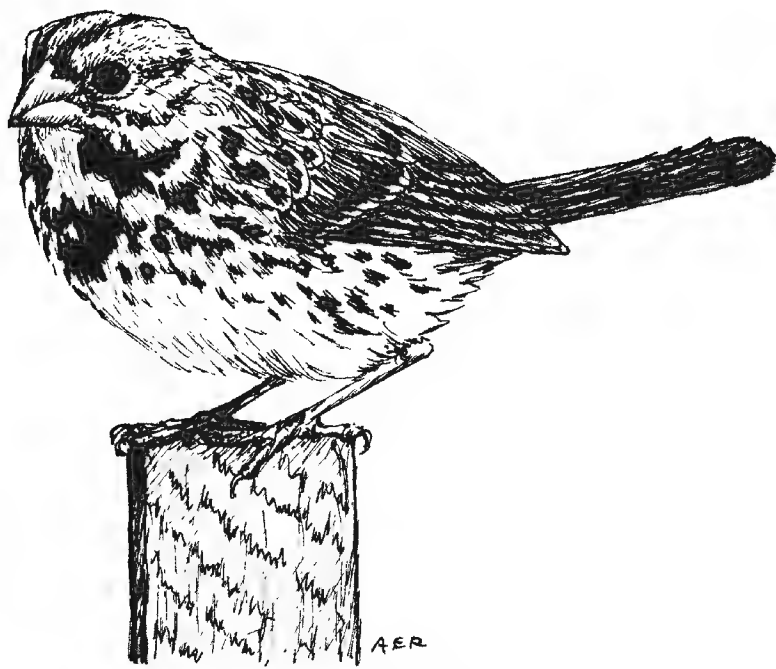
Summer and breeding. One bird at Pittsbug 6 Jun 1996 (E.B. Nielsen, S. Sweet) raised the possibility of breeding; this was confirmed by an adult carrying food there 9 Jun and 28 Jun 1997 (E.B. Nielsen, S. Sweet), the first known breeding record for the state (Nielsen 1997). It appears to be increasing nearby in northern and western ME (R.S. Ridgely pers. comm.).

Taxonomic note. The regular seasonal transient and occasional breeding form is nominate *P. i. iliaca*. However, a bird now thought to be of the form *P. i. unalaschensis*, a member of the “Sooty” Fox Sparrow Group (NHRBC) appeared in 2009. It was found at Barrington from 9 Dec 2009 to 20 Mar 2010 (T. Chase *et mult.*). The only records known of western forms from east of the Mississippi River are 1 specimen of *P. i. altivagans* from Long Island in 1971 (Buckley 1989), 2 sight records of that form from Maryland and Virginia in 2001 and 1998 respectively (Iloff and Bevier 2010), and 1 sight record of a “Sooty” form from Connecticut in 1996 (Hanisek 1997). Two color photographs of the New Hampshire bird appear on the back cover of NHBR 28(4) and 3 photographs of the same bird are included in the article by Mlodinow *et al.* (2012). The latter article concurs with the NHRBC that the New Hampshire bird was properly identified as *P. i. unalaschensis*. The suggestion by Illoff and Bevier (2010) that the bird was from the “northwest portion of the [Slate-colored group] range where *altivagans* intergrades with ‘Sooty’” group was dismissed by the NHRBC.

Song Sparrow *Melospiza melodia*

Status. Common migrant and breeder, regularly wintering in modest numbers.

Early reports to 1950. It seems possible that the “Spring Bird, *Fringilla*,” of Belknap (1792) belongs here as suggested by Allen (1903). Maynard (1871) found it breeding near Lake Umbagog, and J. Dwight collected 7 specimens at Hollis between 24 May 1875 and 12 Aug 1887 (AMNH #405434–405438 and #405570–405571). Goodhue (1877a) called it a common summer resident and seasonal migrant at Webster. Chadbourne (1887) found it at 5340 feet elevation on Mt. Washington, still the elevation record. Thaxter (1894) reported it from the Isles of Shoals. Brewster said it was a very common summer resident of cleared areas at Lake Umbagog in 1871–1909, his extreme dates there being 25 Mar 1904 to 27 Oct 1884 (Griscom 1938). Allen (1903) thought it a common summer resident and migrant statewide, especially in cleared areas up to 2000 feet elevation.



Dearborn (1898, 1903, 1905) called it very common to abundant at Belknap and Merrimack Counties, the Durham region, and Northfield respectively, his extreme dates being from 11 March to 30 November. Howe (1901–1903) at Bridgewater, Marble (1907) at Crawford Notch, Thayer (1912) at Dublin and Wright (1911) near Jefferson all considered it a common to abundant summer resident and seasonal migrant. At Hanover, Lord's (1918) earliest arrival in 1912–1917 was 23 March and the average of those years was 27 March. At Concord, White (1924b) described it as a common summer resident and an abundant migrant which left at the end of August, his latest being 4 November. Later White (1937) gave the fall peak migration period as 25 September to 24 October, his latest on 10 November in fall, extreme early spring arrival on 22 Feb 1937, and peak spring migration period as 24 March to 13 April. White (1937) also reported the first known successful wintering for the state at Concord in the winter of 1931–1932 (W.C. Morris). Shelley (1935i) reported his latest for the Connecticut River valley at East Westmoreland on 25 and 26 Nov 1934. Wright (1937a) found it nesting on White and Star Islands in the summer of 1935.

Reports submitted to RNEB in 1936–1950 show the earliest first spring arrival on 11 Mar 1950 at Hampton (J.J. Barry *et al.*) and usual first arrival by the second or third week of March. Peak spring migration was usually in the first 2 weeks of April and the highest spring count known was 500 at Hanover 9 Apr 1950 (R.L. Weaver *et al.*). Fall migrants were moving by early September and peak fall migration period was the month of October. Peak fall count was 206 at Manchester 13 Oct 1938 (E.J. Goellner). A few birds lingered into early November but almost all were gone by the last week of November. A few remained in the coastal region and the southern parts of the 2 major river valleys, occasionally into January but rarely through February. Three birds did survive the entire winter of 1936–1937 at Manchester (E.J. Goellner) from mid-December through March.

In summary, this species has apparently been at least lo-

cally common since colonial times, increasing significantly as deforestation progressed 1750–1875. Regrowth of forest, especially in the general area from the White Mountains northward, has reduced its abundance somewhat since 1900.

1950 to present. Still one of the most abundant and widespread species in the state as a migrant and breeder, but its breeding population is declining as shrubland matures into woodland (Hunt 2009b); regularly present in winter, primarily at the coast and in the southern counties.

Spring. In mild and early spring seasons, the earliest migrants have appeared in the southern part of the state by the second week of March and have reached Errol and Pittsburg by the last week of March. General arrival has varied with weather from the third week of March to the first week of April and peak spring migration period is typically about a week after general arrival. Peak spring counts in the 100–200 range are not uncommon, the highest counts ever recorded being 432 at the coast 18 Mar 2007 (S.R. and J. Mirick) due to a snowstorm and a stunning total of 2429 birds collectively in the towns of Gorham, Milan, Dummer, Wentworth's Location, Colebrook, and Pittsburg on 13 Apr 1969 (V.H. Hebert).

Summer and breeding. The *Atlas of Breeding Birds* project in 1981–1986 recorded confirmed or probable breeding in 170 atlas blocks in every part of the state, including at the Isles of Shoals, except at elevations above 2000 feet as in the White Mountains (Foss 1994). There seems little reason to think there has been much change since then. Long-term New Hampshire BBS population trend data show a small decline averaging 1.3% per year in 1966–2009 and 1999–2009 (Appendix IV).

Fall. Southbound migration begins by early September, and peak fall migration period is usually from the last week of September through the first 2 weeks of October: 300 at Concord 6 Oct 2002 (R.W. and M. Suomala *et al.*). Flocks in the 100–150 range are not unusual in the coastal region and in the southern parts of the 2 major river valleys in early October. At Star Island 15+ were found 13 Sep 1964 (ASNH field trip). General departure is usually by the last week of October or first week of November, though birds frequently linger into late November at the coast, in the Lakes Region, and even in the northern part of the Connecticut River valley. Statewide CBC totals in the last 2 weeks of December have exceeded 100 on several occasions, including birds rarely at Errol and Pittsburg. Usual statewide CBC totals have been in the 200–400 range since the 1990s.

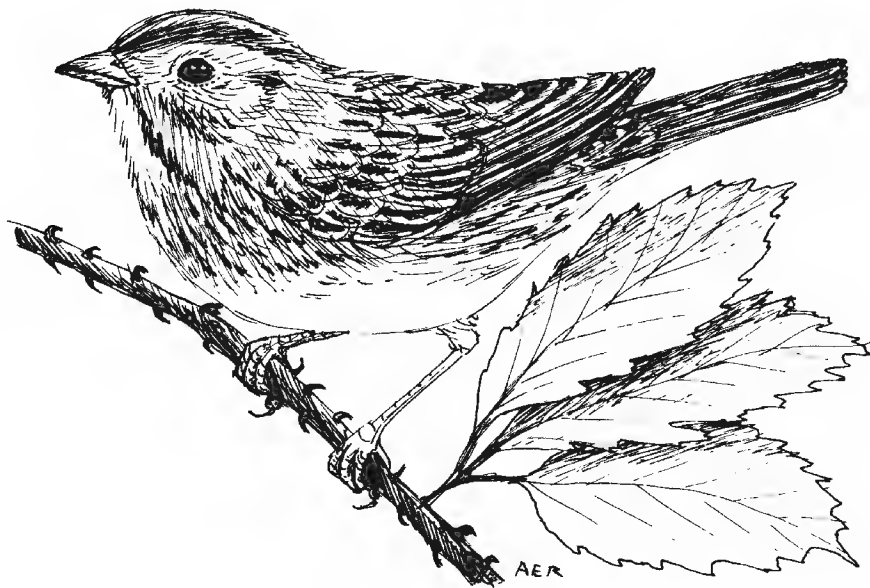
Winter. In recent years modest numbers have survived to early January and sometimes through January and February, most often in the coastal region, but very few in harsh winters and then rarely away from feeding stations. Forty-seven birds were reported in Jan and Feb 2009, including 22 from inland localities (v.o.).

Lincoln's Sparrow *Melospiza lincolnii*

Status. Uncommon spring and fall migrant, local breeder only in the northern part of the state. Rare into early winter.

Early reports to 1950. Goodhue (1877a) thought it very rare at Webster; he collected specimens in the springs of 1874 and 1875 and saw very few others. One was collected at Hollis 14 Sep 1876 by J. Dwight (AMNH #404915). At Lake Umbagog, Brewster took a special interest in this species but only had 2 records in spring on 15 May 1896 and 1 Jun 1876; he found it a "regular fall transient, often quite common" between extreme dates of 11 Sep 1889 and 16 Oct 1893 (Griscom 1938). Dearborn (1898) thought it rare in Belknap and Merrimack Counties, and it was not mentioned at all by Howe (1901–1903) at Bridgewater, by Marble (1907) at Crawford Notch or by Lord (1918) at Hanover, suggesting it was at least uncommon or not present during the times of year about which they wrote. Dearborn (1903) called it rare at Durham, having collected 1 on 13 May of a year not stated, his only record there, and (1905) called it rare at Northfield.

Allen (1903) thought it "rare in spring, but rather common in fall" in contrast to other writers. His extreme dates for the state were 7 Sep 1899 to 4 October in fall and 15 to 26 May in spring. Thayer (1902) reported 1 possibly breeding at Nubanusit Lake in southwestern New Hampshire on 28 Jul 1900, a record believed improbable now (T. Richards *in* Foss 1994). Thayer (1912) considered it a fairly common transient in "late March" and in late September near Dublin; the present authors think he may have intended "late May" instead of in late March, the latter being very unlikely (R.A. Quinn pers. comm.). In the Jefferson region, Wright (1911) described it as an uncommon fall migrant which he also found in summer on 5 Aug 1906 and 21–23 Aug 1908, leading him



to think it might breed nearby; he also saw what he thought was an early migrant on 3 Sep 1910. At Webster, Goodhue (1922) considered it rare, though he managed to collect 13 specimens in the prior 40 years. In nearby Concord, White failed to include it at all at first (1924) but later (1937) he called it very rare and had only 4 reports, all in spring: 17 May 1920 (F.M. Abbott), 17 May 1933 (B.B. Warfield), and 17 May 1934 and 23 May 1935 seen by himself.

The first certain breeding season record was 1 at Pittsburg 5 Jul 1947 (T. Richards), and 1 or more birds were found in each of the following 8 years there and in Stratford, Cambridge, Columbia, Errol, and Albany (T. Richards *in* Foss 1994). Reports submitted to RNEB in 1936–1949 show it to be a regular transient in spring between extreme dates of 1 May 1949 at Hinsdale (R.H. MacArthur *et al.*) and 1 banded at Manchester 26 May 1937 (E.J. Goellner), and in fall from 10 Sep 1949 at Monroe (R.B. Emery, I.F. Hunt) to 1 at Manchester 22 Oct 1938 (E.J. Goellner). Peak count was 4 at Manchester 23 Sep 1938 (E.J. Goellner). Peak spring migration period was the third week of May and in fall was the last week of September and the first week of October. The great majority of reports were from the Merrimack and Connecticut River valleys.

In summary, some early field workers seem to have been better at detecting this secretive species than others, so there are varying notions about its status and abundance among early writers. It seems most likely that it was an uncommon but regular migrant prior to 1950, principally in the interior.

1950 to present. Continues as a regular spring and fall migrant and local breeder, with some evidence of an increase in abundance. Breeding population considered stable (WAP 2005).

Spring. By far the earliest known spring migrants are 1 banded at Bedford 30 Mar 1963 (J.H. Kennard) and 1 at East Kingston 31 Mar 2005 (D.W. Finch), possibly birds that wintered not too far farther south. Next earliest is 1 at Chester 26 Apr 2007 (A. and B. Delorey) though usual first arrival is not until the first or even the second week of May. Peak count is 20+ recorded statewide in an unusual fallout 11–19 May 1996 (v.o.). Latest spring migration report well south of the breeding area is 1 banded at Rye 2 Jun 1971 (E.W. Phinney). Extreme dates at the Isles of Shoals are 1 at White and Seavey Islands 7 May 2000 (D. Hayward, M. Charette) to 1 banded at Star Island 3 Jun 2000 (R.W. Suomala *et al.*).

Summer and breeding. Since discovery of breeding birds in 1947, the number of birds and the area of nesting has expanded. Breeding is now known in most of Coos County, 1 site in northern Grafton County, and at isolated sites in Enfield (1996) and in Grafton, the southernmost known locality. During the 1981–1986 *Atlas of*

Breeding Birds project, birds were confirmed or believed to probably be breeding in 25 priority atlas blocks (Foss 1995). The size of the annual breeding population has varied since 1950 from only a handful of pairs to 25 (1975) or more, the number generally trending upward over time as “logging and farm abandonment continue to create potential nesting habitat” (T. Richards *in* Foss 1994). However, since the 1980s, abandoned farms have now grown up into trees and the same original farms are no longer suitable habitat. Long-term New Hampshire BBS population trend data show a small increase averaging about 2.1% per year in 1966–2009 and 1999–2009 (Appendix IV). A presumed nonbreeding straggler was at Center Harbor 21 Jul 1971 (J.P. Merrill). A pair nested and was observed singing and carrying food at North Sandwich from 28 May to at least 20 Jul 2005 but breeding success was not confirmed, and 6 pairs were at Church Pond Bog, Albany, 20 Jun 2008 (both R.S. Ridgely). A straggler was far south at Winchester 11 Jul 2008 (L. Tanino).

Fall. Earliest known fall migrant well south of the breeding range is 1 at Hopkinton 24 Aug 1975 (T. Richards). Usual first southbound birds are found in the first or even the second week of September, and peak fall migration period now appears to be the last week of September and the first week of October. Virtually all birds have left by the last week of October; latest known mainland migrant date is 1 at Surry 11 Nov 2006 (L. Tanino). Extreme migration dates at Star Island are 1 on 31 Aug 1999 (R.W. Suomala *et al.*) to 2 there 8 Nov 1970 (D.W. Finch, R.W. Smart), and peak count there is 11 on 30 Sep 2007 (E.A. Masterson *et al.*).

Winter. Ten reports include single birds at Star Island 20 Dec 1967 (CBC), Newcastle 29 Dec 1974 (*fide* D.J. Abbott), the coast 15 Dec 1991 (CBC), Concord 28 Dec 1997 to 9 Jan 1998 (R.A. Quinn, T. Richards), Stratham 20 Dec 2003 (CBC, J. Goodwin; photo), East Kingston 29 Dec 2004 to at least to 31 Mar 2005 (D.W. Finch), Bedford 17 Dec 2006 (R.A. Quinn *et al.*), Durham 23 Dec 2006 (S.R. and J. Mirick *et al.*), Stratham 27 Jan 2007 (T. Bronson *et al.*), on the Coastal CBC 19 Dec 2009 (*fide* D.B. Donsker), at Nashua 6 Jan 2010 (D. Fortnam; photo), Stratham 28 Jan 2010 (P. Brown), Walpole 31 Dec 2010 (K. Klapper), and Stratham 22–29 Jan 2011 (P. Brown *et al.*).

Swamp Sparrow *Melospiza georgiana*

Status. Common migrant and common breeder almost statewide. Rare in early winter along the coast.

Early reports to 1950. The earliest published reference to this species is that of Goodhue (1877a) who called it common in summer near Webster in appropriate habitat. At Lake Umbagog, Brewster found it locally common in

summer, his extreme dates there being 12 May 1896 to 31 Oct 1884. Howe (1901–1903) considered it a locally common summer resident in proper marsh habitat at Bridgewater as did Thayer (1912) at Dublin and Dearborn (1898, 1903, 1905) in Belknap and Merrimack Counties, in the Durham area and at Northfield, respectively. Wright (1911) also considered it locally common in summer but an uncommon fall migrant near Jefferson, his latest in fall being 13 Oct 1903. Allen (1903) called it “rather common” as a spring and fall migrant generally statewide and local during breeding season. Lord’s (1918) earliest arrival in spring at Hanover 1912–1917 was 2 May and average for those years was 11 May, surprisingly late. At Concord, White (1924b, 1937) thought it very common in proper habitat, his extreme dates there being 12 Apr 1921 and 4 Nov 1919. Wright (1937a) found a juvenile on Square Rock in the Isles of Shoals 20 Jul 1935, a tiny island virtually devoid of vegetation; I can only speculate why it was there at that season.

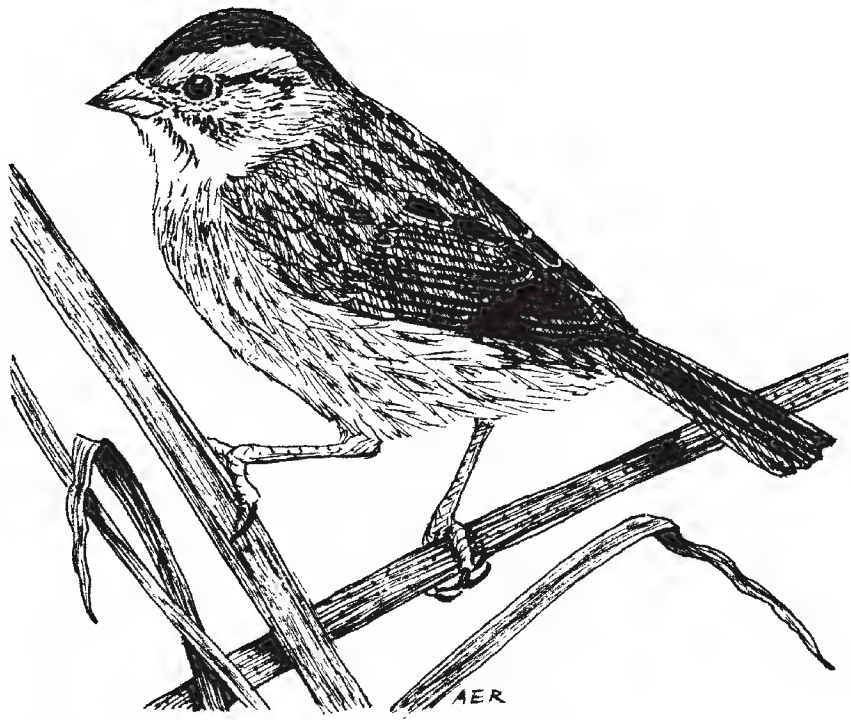
Not as many reports of this species were submitted to RNEB in 1936–1949 as most other common sparrow species. Earliest known spring arrival published was 11 Mar 1945 at Monroe (R.B. Emery, I.F. Hunt) and latest in fall was 2 at Manchester 16 Nov 1937 (E.J. Goellner). Peak spring migration period was last 2 weeks of April and peak fall period was the middle 2 weeks of October. Presence of breeding birds obscured late spring and early fall migration dates. No winter records were reported.

In summary, because of its habitat preference, this species appears to have been an only locally common breeder though a regular transient during migration in New Hampshire since 1875, its status probably essentially unchanged for a century before that.

1950 to present. Modest increase in breeding population noted; more often found in late fall to early winter than formerly. Breeding population listed as stable since about 1990 by Hunt (2009b).

Spring. Earliest known arrivals are 1 at Exeter 16 Mar 1995 (G. Mitchell) and 1 at Concord 23 Mar 1966 (K.E. Dymont). There is a handful of other late March reports, but early general arrival is more typically in the first week of April. Peak spring migration period is usually the middle 2 weeks of April, and peak known mainland spring count is 22 at Bedford 9 May 1964 (R. Lawrence). Extreme dates for migrants at the Isles of Shoals are 3 at White and Seavey Islands 29 Apr 2003 (D. Hayward *et al.*) to 5 at Star Island 30 May 1968 (ASNH field trip), with a high count of 50+ on 14 May 1967 (E.W. Phinney *et al.*).

Summer and breeding. As shown in the *Atlas of Breeding Birds* project 1981–1986, it is widespread throughout most of the state in appropriate habitat; it was confirmed breeding or believed probably doing so in 109 atlas



blocks (Foss 1994). Long-term New Hampshire BBS population trend data show a very small increase in 1966–2009 and 1999–2009 (Appendix IV). Draining and disturbance of wetlands, especially in the southern part of the state, is likely to prevent much further increase there, but the return of the Beaver and the ponds it creates may be an offset by increasing suitable habitat in other areas. This species is most common at lower elevations but is known as high as 2500 feet elevation in the White Mountains (T. Richards *in* Foss 1994).

Fall. There is some southbound migratory movement by the first week of September as illustrated by 20 at Charlestown 2 Sep 1967 (W.W. Kidder). Peak fall migration period is the last week of September and most of October, peak counts in this period being 125 in the lower Merrimack River valley 28 Sep 1965 (R.W. Lawrence), 250 at Concord 6 Oct 2002 (R.W. and M. Suomala *et al.*), and 100 at Durham 10 Oct 2004 (S.R. Mirick *et al.*). Latest report north of the White Mountains is 1 at Littleton 11 Nov 1959 (R.G. Carpenter II). The great majority of birds have left by the first week of November but a few linger into early December, especially in the coastal region and the lower major river valleys. Extreme dates for migrants at Star Island are 2 on 29 Sep 2002 (M. Suomala *et al.*) to 4 on 3 Nov 1968 (E.W. Phinney), peak count being 30 on 5 Oct 2007 (E.A. Masterson).

Winter. Birds have been found on CBCs at the coast in most years since 1953, including single birds at Star Island 31 Dec 1965 (E.W. Phinney *et al.*) and 29 Dec 1971 (L.G. Phinney). Some birds present in late December may linger into mid-January, almost all of them in the coastal region, but few survive through February and March. There was a rare inland report at Pittsfield 27 Jan 2008 (G.C. and A. Robbins). One successfully wintered at Kensington in each of the 1986–1987 and 1988–1989 winters.

White-throated Sparrow *Zonotrichia albicollis*

Status. Common to abundant seasonal migrant, common breeder in the spruce-fir forest, and regular winter resident in small numbers.

Early reports to 1950. Since he described it as a common summer resident and abundant fall migrant, Brewster must have found it at Lake Umbagog in 1871 on his first visit there, this being the earliest known state record (Griscom 1938). Goodhue (1877a) called it a common migrant at Webster, breeding in numbers on nearby Kearsarge Mountain. J. Dwight collected 2 specimens at Campton Village and 4 in Hollis between 26 Sep 1884 and 15 May 1876 (AMNH #404510–404515), the 2 birds at Campton being found there in July and August. Dearborn (1898) thought it a common spring and fall migrant but an uncommon breeder in Belknap and Merrimack Counties. Howe (1901–1903) called it uncommon at Bridgewater except on nearby Mt. Cardigan where it was abundant. At Durham Dearborn (1903) called it only a spring and fall migrant from 23 April to 10 May and from 23 September to 19 October respectively. At Northfield, Dearborn (1905) considered it an abundant migrant but only a sparse summer resident.

Allen (1903) called it a common spring and fall migrant and common summer resident and breeder in the Canadian habitat zone regularly up to 4800–5000 feet elevation; highest recorded probable breeding elevation is about 5300 feet on Mt. Washington (Chadbourne 1887). Marble (1907) found it a common summer resident at Crawford Notch, and Thayer (1912) called it a local and uncommon summer resident in the Dublin area though sometimes abundant in migration and very occasionally lingering through December. Wright (1911) thought it an abundant summer resident in appropriate habitat in the Jefferson area, with a peak count of at least 100 there on 4 Oct 1910. At Hanover, Lord (1918) recorded its earliest arrival in 1912–1917 on 14 April and the average on 21 April in those years. At Concord, White (1924b) thought it a common to abundant migrant and increasing as a summer resident, the fall peak migration period 6 to 15 October. Later (1937), he called it a common seasonal transient at Concord between 23 Apr 1933 and 25 May 1921 in spring and once through the winter of 1928–1929 (E.L. Hutchinson). Whittle (1930b) reported that a bird banded at Hanover 30 Apr 1929 was killed at Tabor, North Carolina, 24 Dec 1929. Shelley (1932d, 1934e, 1936a) recorded it at East Westmoreland in winter: 27 Feb to 26 Mar 1932, 4 Jan 1934, and 3 Feb 1935.

Reports submitted to RNEB in 1936–1949 period show it to have been a common fall migrant, the earliest known from a place where it did not breed being 1 at Hanover 11 Sep 1948 (L. Forsyth); most birds had passed south by the last week of October or the first week of November, though some occasionally lingered until late November.

In about half the years in this period a few stayed into January or through the winter at feeders from the Lakes Region southward. Earliest known northbound spring migrant was 1 at Monroe 14 Apr 1947 (I.F. Hunt), later migrants indistinguishable from summering birds.

In summary, this has been a common bird in the state for at least 200 years, probably becoming more restricted to northern areas and the mountains during the period of deforestation 1750–1875. It then increased in the central and southern parts of the state as abandoned fields began to grow up into scrub habitat after 1900 but perhaps became slightly less common in the north.

1950 to present. Common to abundant migrant and common breeder; regular and increasingly numerous in winter. However, population trend listed as declining by Hunt (2009b, 2012).

Spring. Birds that occasionally appear at feeders for the first time in the first 2 weeks of March are possibly birds that wintered nearby at other feeders or not much farther south. Usual first arrival is in the first or second week of April, and peak spring migration period is usually the last week of April and the first week of May, sometimes earlier in the southern counties than in the White Mountains and northward. Peak spring count is 300 in the coastal region 2 May 1965 (E.W. Phinney *et al.*) though single-day counts over 50–100 are now scarce. Extreme dates and peak counts for migrants at the Isles of Shoals are 11 at White and Seavey Islands 24 Apr 2001 (D. Hayward, A. LeFrancois), 50 on 30 Apr 2000 (D. Hayward, M. Charette), 150 on 2 May 2000 (D. Hayward, M. Charette), and 1 at Star Island 1 Jun 1969 (R.W. Smart *et al.*).

Summer and breeding. This bird breeds almost everywhere in New Hampshire except in coastal areas of Rockingham and Strafford Counties where it is an uncommon to rare breeder. During the 1981–1986 *Atlas of Breeding Birds* project, it was confirmed or believed probably breeding in 170 of the atlas priority blocks statewide, including in the coastal region, making it 1 of the most widespread breeding birds in the state. Long-term New Hampshire BBS population trend data show a moderate decline averaging about 3.7% per year in 1966–2009 and 1999–2009 (Appendix IV).

Fall. An occasional southbound bird is found away from breeding areas by mid- or late August; a very early one was at Concord 8 Aug 1966 (H.B. Miller). Usual first fall arrival is by the second week of September and peak migration period is usually the last week of September through the first 2 weeks of October. Peak fall counts are 3000 in the New Hampton region 7 Oct 1959 (V.H. Hebert *et al.*) and 600 at Concord 6 Oct 2002 (R.W. and M. Suomala) though counts over 500 are rare. Extreme dates for migrants at Star Island are 10 Sep 2000 (R.W. Suomala *et al.*) to 2 on 13 Nov 1966 (ASNH field trip);

peak count there is 300 on 30 Sep 2007 (E.A. Masterson *et al.*). Most migrants have left by late November. In recent years moderate numbers have lingered into late December and appear on CBCs as far north as Littleton, Errol, and Pittsburg.

Winter. In most years some birds survive January and February at feeders, often in the central and southern parts of the state, especially in the coastal region. The number of birds successfully wintering has risen steadily from the 1960s through the 1990s and until 2009. At least 49 birds were reported in Feb 2009 (v.o.). Rarely found in February in Coos County: 1 at Pittsburg 8 Feb 1994 (B. Verville).

Harris's Sparrow *Zonotrichia querula*

Status. Very rare visitor from the west, usually appearing first in late fall; once wintering.

Reports. Seven records. One adult at Tilton 30 Dec 1964 to 21 Apr 1965 (V.H. Hebert *et mult.*). One immature at Greenland 13 Dec 1970 to 11 Feb 1971 (Mrs. E. Wykes, E.W. Phinney *et mult.*). One immature at Plymouth 11–14 Nov 1973 (K.C. Elkins, V.H. Hebert *et mult.*). One immature at Dover 21 Oct 1974 (P.E. Keenan). One at Moultonborough 10–17 Nov 1975 (H.W. Parker, K.C. Elkins *et al.*), 1 at Berlin 22–24 Dec 2000 (K. Dube *et al.*), and 1 at Campton 16–22 Nov 2002 (C. Johnson *et mult.*; photo NHBR 21 [3], cover and 36). Two accepted records for VT in 1949 and 2000 (C.C. Rimmer pers. comm.); at least 22 records for MA (Veit and Petersen 1993, BO database 2010), and 5 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

White-crowned Sparrow *Zonotrichia leucophrys*

Status. Regular spring and fall migrant, more numerous in fall; rare in winter.

Early reports to 1950. The first report for the state appears to be that of Goodhue (1877a) who called it a common spring and fall migrant at Webster. The next records were those of W. Brewster at Lake Umbagog; his full journals are not published so he may have found the species there as early as 1871, but his extreme dates were 12–17 May 1896 in spring and 23 Sep 1899 to 13 Oct 1884 in fall; on 2 Oct 1899 he estimated over 100 individuals (Griscom 1938). Dearborn (1898) called it uncommon in Belknap and Merrimack Counties as well as about Durham (1903) and Northfield (1905). Allen (1903) considered it uncommon in the southern part of the state, “seemingly more plentiful in the higher country;” his extreme dates were 6–25 May in spring and 21 September to 11 October in fall.

Thayer (1912) called it a regular spring and fall migrant at Dublin as did Wright (1911) in the Jefferson region—

neither had much else to say about it. Marble (in 1927 addition to 1907 publication) only had 1 report at Crawford Notch, a single bird on 22 Sep 1911. At Hanover, Lord (1918) said its earliest spring arrival in 1912–1917 was 8 May and the average of those years was 10 May. White (1924b) considered it an uncommon migrant at Concord but later (1937) thought it a regular spring and fall transient in irregular numbers, present in spring for a shorter time than in fall.

Reports submitted to RNEB in 1936–1949 show it to have been a regular spring migrant in modest numbers between extreme dates of 30 Apr 1939 at Manchester (E.J. Goellner) and 24 May 1947 at New Hampton (V.H. Hebert) and also in fall between 14 Sep 1948 at Andover (K.C. Elkins) and 15 Nov 1945 at Monroe (R.B. Emery). Peak fall count before 1950 other than in 1899 was 52 at Manchester 25 Oct 1937 (E.J. Goellner). An unusual summer record was 1 at Ossipee on 13 Aug 1943 (E.E. Pratt).

It seems likely that as the number of observers and their expertise grew, this species was recorded more often and during wider migration windows in spring and fall, rather than that its numbers increased significantly in the state.

1950 to present. Continues as regular migrant; lingers to early winter.

Spring. Earliest arrivals known are 2 at Rochester 11–27 Mar 2007 (D. Hubbard), 2 at Charlestown 16 Mar 1963 (W.W. Kidder *et al.*), 1 on 21–23 Mar 1973 at Londonderry (D.M. MacRae), and 1 at Concord 26 Mar 1963 (M.N. Dodge). All these reports may have been birds that wintered nearby because the earliest record otherwise is 5 Apr 1986 at Pittsfield (G.C. and A.E. Robbins). Usual early arrival is the last week of April and peak spring migration period is the first 2 weeks of May. Peak spring high count in a day is 100+ in the Lancaster–Pittsburg area 12 May 1963 (V.H. Hebert *et al.*) though counts over 20 are scarce; 170+ were recorded in an unusual statewide fallout 11–19 May 1996 (P. Lacourse *et mult.*). Virtually all birds are gone by the last week of May. Late stragglers have been 1 at Livermore at 2900 feet elevation 4 Jun 1968, also the elevation record (D.W. Brainard); 1 at Jackson 6 Jun 1964 (J. Warren *et al.*); and 1 at New Ipswich 18 Jun 2005 (E. Danisienka). Extreme dates for migrants at Star Island are 2 May 1971 (A.C. Borrer *et al.*) and 7 Jun 2000 (R.W. Suomala *et al.*).

Fall. Earliest known arrival is 1 on 2 Sep 1964 at Pittsburg (W.W. Kidder) though usual first arrival is not until the second or third week of September. Peak fall migration period is the first 3 weeks of October. Peak fall count is 366 in Coos County 16 Oct 1966 (V.H. Hebert, R.W. Smart) though single-day counts over 60 are scarce and there have been none since 2000. Most birds are gone by the second week of November though a few occasionally

linger into early December. Extreme dates for migrants at Star Island are 28 Sep 2000 (R.W. Suomala) to 2 there 2 Nov 1969 (E.W. Phinney *et al.*), and peak count is 50 there 30 Sep 2007 (E.A. Masterson *et al.*).

Winter. Rarely birds are found into late December on CBCs, most often at the coast. Latest known inland reports are 1 at Center Harbor 16 Jan 1960 (J.P. Merrill), 1 at Monroe 1 Feb 1958 (I.F. Hunt), and 1 at Manchester 1 Feb 1997 (M.T. and R. Martin). Latest coastal records are 1 at Kensington 27 Jan 2007 (E.A. Masterson *et al.*), and 1 at New Castle 4 Feb 2007 (S.R. and J. Mirick).

Taxonomic note. The usual spring and fall transient in the state is nominate *Z. l. leucophrys*. The distinctly-marked “Gambell’s” race *Z. l. gambeli*, a rare visitor from the west, has appeared in New Hampshire at least 7 times, mostly in October. All records listed here are of adult birds seen by persons previously well-experienced with this race; a few have been photographed. Over 30 records for MA (Veit and Petersen 1993, BO database 2010) and recent records almost annually in ME (*fide* P.D. Vickery).

One adult at New Hampton 25–28 Oct 1965 (R.W. Smart, V.H. Hebert *et al.*), 1 at Merrimack 3 Oct 1966 was trapped and banded (R.W. Lawrence), 1 at Stewartstown 7 Oct 1970 (photo in NHAN Vol. 6 [3] by C.A. Rogers), 2 at Londonderry 3–7 Oct 1973 (D.M. MacRae), 1 on Star Island 21 Oct 1973 (D.J. Abbott, D.W. Finch *et al.*), 1 at Manchester 1 Feb 1997 (M. and R. Martin), and 1 at Newmarket through the winter from late 1994 to 29 Apr 1995 (P. Lacourse, S.R. Mirick *et al.*).

Golden-crowned Sparrow *Zonotrichia atricapilla*

Status. Vagrant from the west. Two records: 1 at Tamworth 27–29 Apr 1985 (M.N. Damon; photo), and 1 juvenile at Derry 17–19 Oct 2010 (B. Horton *et mult.*; photos). At least 12 records for MA (Veit and Petersen 1993, BO database 2010), and at least 1 accepted record for ME (ME-BRC website).

Dark-eyed Junco *Junco hyemalis*

Status. Common summer resident and breeder in much of the state, especially at higher elevations; abundant spring and fall migrant, and regular in winter in the Lakes Region and south of there.

Early reports to 1950. The “Snow Bird, *Emberiza hyemalis*?” of Belknap (1792) almost certainly belongs here based on his description of its habits. Though his journal for 1871 is not published, W. Brewster surely found this species at Lake Umbagog on his visit there that year; he described it as a common summer resident and breeder and abundant in fall migration (Griscom 1938). Goodhue (1877a) considered it abundant at Webster, nesting on nearby mountains. J. Dwight collected 1 at Hollis 2

Apr 1895 (AMNH #402058). Howe (1901–1903) thought it an uncommon summer resident at Bridgewater but a common breeder on the nearby mountains and down to 600 feet elevation at Squam Lake. In Belknap and Merrimack Counties, Dearborn (1898) considered it a common spring and fall migrant, breeding on Mt. Kearsarge and (1905) at Bean Hill, Northfield. At Durham, Dearborn (1903) called it a regular spring and fall migrant, a few wintering; his extreme dates there were from 5 October to 1 May.

Allen (1903) considered it an abundant spring and fall migrant statewide, a common summer resident and breeder in the coniferous Canadian zone, and a winter resident in the southern parts of the state. South of the Lakes Region, he thought it a local summer resident, mostly at higher elevations. He reported it breeding from 520 to 6291 feet elevation, the latter near the summit of Mt. Washington. Marble (1907) described it as an abundant summer resident in Crawford Notch, nesting commonly there. Thayer (1912) found it very common at Dublin, abundant in migration, and breeding on Mt. Monadnock. Wright (1911) thought it a common summer resident in the Jefferson region, an abundant spring and fall migrant there, and recorded egg dates from 13 June to 4 August.

At Hanover, Lord's (1918) early spring migrant arrival date in 1912–1917 was 1 March; his average was 27 March. At Concord, White (1924b, 1937) described it as an abundant fall migrant, a slightly less abundant migrant in spring, rare in midwinter, and very rare in summer. He also noted that the peak spring and fall passage period varied from year to year, in fall from first week of October to the middle of November, in spring from mid-March to the first week of April. L. O. Shelley (1931e) reported that a bird he banded at East Westmoreland 5 Apr 1931 was found dead 24 Apr 1931 at Doakstown, New Brunswick. At the Isles of Shoals, Allan (1931) reported it on an unspecified island 6 Oct 1929, and Wright (1937a) found a large migrating flock on Appledore, ME, 5 Oct 1935.

Reports submitted to RNEB 1936–1949 show it to be a common fall migrant, regularly appearing south of the White Mountains for the first time in the last few days of September into the second week of October, peak migration period typically being the last 2 weeks of October into the first week of November. Peak fall count was 500 at Hanover 28 Oct 1945 (H.C. McDade). The last migrants had usually gone through southern New Hampshire by the second or third week of December, after which it was very rare north of the Lakes Region or the White Mountains. Exceptional reports are 3 at Jackson 7 Feb 1940 (R. Alexander), 17 through Feb 1945 at New Hampton (V.H. Hebert), and 2 at Hanover 3 Jan 1949 (L. Forsyth). In spring, first northbound arrivals were usu-

ally noted from the second week of March into the first week of April. Peak spring migration period was usually the middle 2 weeks of April and peak counts were an exceptional 7000 birds at Hanover 9 Apr 1942 (R.L. Weaver) and 1000 there 16 Apr 1942 (R.L. Weaver). Extreme late migrants are not distinguishable from summer residents.

In summary, this species appears to have been common and widespread over much of the state from the 1700s to 1950. If there were variations in its abundance during this period, there are no data to show that.

1950 to present. There was little change from the prior 25 years other than a modest decline in general breeding numbers (Hunt 2009b); it is now wintering more widely and in greater numbers, especially in the southern part of the state, in the coastal region, and north of the White Mountains.

Fall. Beginning of southbound migration and peak of migration activity is still as described above for the 1936–1950 period. Peak fall count in 1 day is an amazing 20,000 seen 18 Oct 1959 (R.W. Smart, A.R. Keith, V.H. Hebert) along the 90 miles between Franconia and Errol with 2000 alone at Jefferson Meadows. The second highest known count is 1500+ at the coast 23 Oct 1969 (E.W. Phinney *et al.*), but counts over 400 in a day have been unusual in recent years and fall migrant numbers can vary widely from year to year. In many years there are few or no birds left north of the White Mountains after late November; in other years the numbers at feeders in the Lakes Region and in some parts of the northern Connecticut River valley can be substantial (i.e., total of 100–200 birds). Extreme dates known for migrants at Star Island where it occurs regularly are 1 on 10 Sep 2000 (R.W. Suomala, M. Libby) to 30 there 1 Nov 1966 (ASNH field trip), peak count there being 200 on 30 Sep 2007 (E.A. Masterson *et al.*).

Winter. Birds began wintering regularly in the late 1950s, the numbers rather variable, and birds are not always present through February at some locations where they were from late December well into January. Now a regular wintering species in the Lakes Region and southward to the coast and in the southern river valleys. Total CBC numbers statewide have exceeded 1000 birds several times since 1980; statewide CBC total in 1994 was 4400 including 147 at Errol/Umbagog 29 Dec and 573 at Pittsburg on 30 Dec. Total CBCs statewide for the 2000–2001 winter were an amazing 18,516 birds, an all-time record, with 2 CBCs in the 4000 range and 6 others over 1000. The reasons for this unusually high total were worked out by Hunt (2001): many birds from the north did not migrate as far south as usual because of good food supplies after a successful breeding year.

Spring. Early spring arrival and peak spring count period since 1950 have been as described above for the 1936–

1949 period, perhaps with some variability due to early and late spring seasons and the number of wintering birds during the prior winter. Peak spring count since 1950 is 900 on 13 Apr 1969 at Gorham (V.H. Hebert *et al.*); counts over 400 at 1 place in a day are scarce and there have been none since 2000. Latest known probable northbound migrant is 1 at Charlestown 20 May 1965 (W.W. Kidder). The only known spring reports from Star Island are 5 there 30 Apr 1967 and 3 there 14 May 1967 (both ASNH field trips).

Summer and breeding. Widespread in most parts of the state except for the coastal region; apparently has been similarly distributed for over a century based on the early records cited above. Has been found nesting from about 475 to over 6000 feet elevation but most commonly between 1500 and 5500 feet (T. Richards *in* Foss 1994). During the 1981–1986 *Atlas of Breeding Birds* project, breeding was confirmed or thought probable in 115 atlas priority blocks. Long-term New Hampshire BBS population trend data show a decline averaging about 2.2% per year in 1966–2009 and 1999–2009 (Appendix IV). Occasionally has more than 1 brood.

Taxonomic note. Two forms of Dark-eyed Junco, usually known as “Oregon Junco” and as “Pink-sided Junco,” are known to occur as rare visitors from the west and have been reported in New Hampshire as well as MA (Veit and Petersen 1993), ME (*fide* P.D. Vickery), and other New England states. High-plumaged male adults of both forms can often be distinguished in the field by experienced observers and are well illustrated in field guides (*cf.* Sibley 2000). Absent specimens, identifications of specific individual birds must be considered hypothetical, but there seems little doubt that both forms have occurred. Several individuals have been well photographed. In the interest of recording information that almost certainly relates to these forms, we include it here.

Oregon Junco. Now classified as *J. h. oreganus*; formerly considered a separate species (*Junco oreganus* in AOU 1957) until 1983 (AOU 1983). Moderately regular winter visitor; most published records pertain to adult males with full black heads and brown backs. Two were reported to Goodhue (1922 in 1930 addition) at Troy on 14 Apr 1929; he was skeptical as was appropriate at a time when it was less known as a visitor to New England. Thayer (1912) collected a bird in an unnamed year near Dublin which he thought had a different voice and may belong here. Thayer sent the specimen to W. Brewster who never rendered an opinion on its race and its present location is unknown. One was reported at Canaan 27 Jan 1941 (A. McAlister). Birds were reported in 14 different years in 1952–1972 and very irregularly since, the reports not always published in NHAQ or NHBR; in the winter of 1965 as many as 6 individuals were at different feeders, all south of the White Mountains. Earliest known fall ar-

rival is 25 Oct 1964 when 1 was at Hampton (R.W. Smart, V.H. Hebert), and latest known lingering in spring is 1 at Holderness 2 May 2000 (J. Williams). Most birds do not arrive until December or January, and very few remain after mid-February, though a few have appeared for the first time in March, as 1 at Chester 5–21 Mar 1998 (A. and B. Delorey).

Pink-sided Junco. Once considered a race of “Slate-colored Junco” (*Junco hyemalis cismontanus* in AOU 1957) but subsequently reclassified as *J. h. mearnsi* and as part of the *oreganus* group (AOU 1998). All records here pertain to presumed adult males with full gray head and upper breast, black lores, and bright pinkish-cinnamon sides. Single birds at New Hampton 6 Jan 1954 (V.H. Hebert), Littleton 4 Oct 1965 (J.C. McIlwaine), Hampton 31 Oct 1965 (R.W. Smart, V.H. Hebert), Keene 18 and 23 Apr 1972 (J.H. Ward), Chester 14 Mar 1995 (A. and B. Delorey), Rochester 15 Dec 1996 (R. Bickford), Nashua 16 Oct 1997 (A. Delorey), and on the Coastal CBC 20 Dec 2008 (*fide* D.B. Donsker).

FAMILY CARDINALIDAE

Summer Tanager *Piranga rubra*

Status. Irregular spring visitor from the south between late April and mid-July. Frequency of records has increased since 1990s. Two fall reports, unknown in winter.

Early reports to 1950. Goodhue (1877a) apparently saw 1 near Webster where he called it “Exceedingly rare; have seen but one,” but he provided no date. Dearborn (1898) reported that G. Stolworthy had seen “a number of males” at Franklin in the “early summer of 1875.” Abbott (1906) reported 1 at Batchelder’s Mills near Concord on 10 Jun 1901, a record apparently and surprisingly unknown to White (1924b, 1937); as some of her records were considered unreliable, perhaps he ignored it.

1950 to present. Most were found in spring to early summer, most likely due to migration overshoot or spring storms. Earliest known report is a male at Londonderry 20–22 Apr 1961 (H.A. Reynolds *et al.*) and latest known is 1 at Concord 16 Jul 2008 (L. Lawson, B. Weiner). From 1958–1975, 8 birds were reported of which 6 were in May. None were reported 1976–1994 and in 1995–2009 there were 14 reports, 10 of which were in May. There were 2 fall reports in 2011: 1 at Star Island 6 Oct 2011 (E.A. Masterson) and 1 at Odiorne Point, Rye, 9 Oct 2011 (P.D. Hunt). Reports since 1950 have come from many localities statewide, but almost entirely south of the Lakes Region.

Scarlet Tanager *Piranga olivacea*

Status. Common summer resident and migrant statewide except for the highest elevations in the White Mountains and some parts of northern Coos County. Appears to have increased modestly in numbers and distribution since 1900, especially in the north.

Early reports to 1950. The first state report appears to be that of Belknap (1792), who included the “Red Linnet, *Tanagra rubra*,” a name for this bird already familiar in Europe at the time. J. Dwight collected an adult male at Hollis 8 Jul 1886 (AMNH #364090). Griscom (1938) said that Brewster only recorded it in the Lake Umbagog region in 1880, 1896, and 1907 but did not say in which state they were found. Thayer (1912) called it common at Dublin. Wright (1911) reported it to be a “not uncommon summer resident” to 2200 feet elevation locally in the Jefferson region and mentioned a late bird at Jefferson 7–12 Oct 1904. Lord (1918) found it regularly at Hanover 1912–1917, his earliest in spring being 12 May and his average spring arrival being 19 May.

In the Merrimack River valley, Morrison (1883) recorded it at Windham as did Farmer (1892b) at Manchester. Goodhue (1877a) called it a common summer resident that bred locally. Dearborn (1898) thought it “fairly common” in Belknap and Merrimack Counties. Allen (1903) called it “not uncommon” generally and reported 1 at Chocorua 25 Sep 1891 (F. Bolles). Howe (1901–1903) considered it a “not uncommon summer resident” at Bridgewater, and Dearborn (1905) called it moderately common at Northfield. Marble (1907) considered it “rare” at Crawford Notch, usually seen in July if at all; 1 female was as late as 18 Sep 1906. Bagg and Eliot (1937) record 1 at Chocorua in 1910 (S.A. Eliot, Jr.). White (1924b) called it “not uncommon in breeding season and migration” at Concord, his earliest in spring being 15 May. Later (1937) he considered it a “common spring transient” and variably common summer resident. Harding (1943) found it at Holderness.

In the coastal region, Dearborn (1903) thought it relatively common at Durham, noting many migrants dying because of a late spring storm in 1900. Allan (1931) did not report it for the Isles of Shoals, but Wright (1937) found a late migrant at Appledore 17 Jun 1936. Reports submitted to the RNEB in 1936–1949 show a regular pattern of spring arrival in the first week of May, the earliest being 2 May 1944 at Hanover (J. Goldthwaite). The peak spring migration period was in mid-May, and the latest fall migrant was 1 at Sandwich 15 Oct 1949 (T. Richards).

1950 to present. Though still common and possibly increased slightly 1950–1980, its breeding population is listed as declining in hardwood and mixed forest since 1990 (Hunt 2009b).

Spring. Earliest known arrival is 1 at Gilford 19 Apr 2002

(M. Wright) though mean first arrival is not until 7 May. Peak migration period is the last 3 weeks of May. Peak counts in this period are 14 at New Hampton 21 May 1960 (R.W. Smart *et al.*) and 17 at Exeter 16 May 1972 (A.C. Borrer *et al.*). Forty-five were found in a woodland survey near Windham 25 May 2003 (M.G. Harvey). Spring migration can continue into early June as the 1936 record at the Isles of Shoals shows. Unseasonably cold and rainy weather in late May and early Jun 1974 (Kent 1974) caused significant mortality among late migrants of this and other insectivorous species. Birds were found searching for food on lawns, roadsides, etc., especially in the 2 major interior river valleys (Zumeta and Holmes 1978). This mortality caused lower population densities in 1974 and 1975 (Robbins *et al.* 1986), but by 1976 and 1977 population densities had rebounded to previous levels (Holmes *et al.* 1986, Robbins *et al.* 1986).

Summer and breeding. Now known to breed virtually statewide. It has been found as far north as Pittsburg during breeding season regularly since the late 1950s, and it was found at 3100 feet elevation in Lincoln in Jul 1968 (T. Richards). It was listed as a widespread but uncommon breeder in the Squam Lake area (Ridgely 1977) and as a “common summer resident” at Dublin (Allison and Allison 1979). Thought to be a “fairly common summer resident and a probable breeder” at the Second College Grant (Cohn-Haft 1983). The *Atlas of Breeding Birds* project 1981–1986 showed it to be present nearly throughout the state in 122 priority atlas blocks where breeding was confirmed or considered probable. New Hampshire BBS population trend data show a modest decline averaging about 1.7% per year in 1966–2009 and 1999–2009 (Appendix IV). Once birds stop singing in mid- to late July, they are harder to locate and most begin leaving breeding territories by mid-August.

Fall. One was observed at 4000 feet elevation on Mt. Wildcat 12 Sep 1983 (T. Richards, B.D. Richards), the highest elevation known for the state. Peak migration period is the second and third weeks of September, and peak count in this period is only 8 at Bristol 13 Sep 1969 (R.W. Smart). Most birds are gone by the end of September, a few occasionally lingering into early October. Latest known in the Connecticut River valley are 1 as far north as the Connecticut Lakes 25 Sep 1953 (F. Burnett) and 2 at Charlestown 21 Oct 1968 (W.W. Kidder), latest known in the Merrimack River valley is 1 at Concord 24–25 Oct 1960 (M.N. Dodge), and latest of all is 1 at Dublin 11 Nov 1960 (T. Richards).

Western Tanager *Piranga ludoviciana*

Status. It is an irregular visitor from the west. Reported annually in MA (Veit and Petersen 1993, BO database 2010), 5 accepted records for VT (C.C. Rimmer pers. comm.), and over 20 records for ME (ME BRC website,

P.D. Vickery pers. comm.). See also Masterson (2002d).

1950 to present. At least 15 individual birds have been recorded in spring, fall and winter.

Spring. Five reports. The first state record was 1 at Meredith 25–28 Mar 1954 (V.H. Hebert *et al.*), the northernmost report at this season. Other records are a male singing at Sullivan 8 May 1961 (Ganley), single birds at Dublin 24 May 1997 (T. Warren), Portsmouth 20 May 2002 (D. Casey, G. DeCarteret, C. Kent *et al.*), and Goffstown 16 May 2007 (B. Peabody).

Fall. Seven reports. These include single birds at Greenfield 18 Aug 1984 (M.T. Martin), a juvenile at Rye 25 Sep 1971 (J.E. Cavanagh), at Lyme 7 Oct 1978 (R.Z. Norman, T.F. Bickel), a male at Manchester 17–24 Oct 1979 joined by a second bird 23–24 Oct 1979 (M.T. Martin), at East Andover 4–14 Nov 1966 (R.S. Holt *et al.*), and at Plymouth 30 Nov 2003 (M.G. Harvey, B. Griffith), the latter being the northernmost at this season.

Winter. Three reports, all from Portsmouth: 1 on 15 Dec 1997 which remained until March 1998 (J.B. Grant *et al.*), 1 on 4 Jan 1980 which remained until 8 Mar 1980 (P. Jackson, R.A. Quinn), and 1 on 8–11 Jan 2003 (S.R. Mirick, M. Harvey, B. Cavanagh; photo on cover and p. 30 of NHBR 21[4]).

Northern Cardinal *Cardinalis cardinalis*

Status. Only 4 reports before 1955 since when it has become a common permanent resident in most of the area south of the White Mountains, in the Connecticut River valley north to Monroe, and into southernmost Coos County.

Early reports to 1950. The first state record (Smith 1932, Bagg and Eliot 1937) was 1 at Woodsville 7 Dec 1931 (R. Bath) but the species was not found again until 1 was at Amherst from the first week of Mar to the second week of Apr 1944 (A. Lincoln). This was followed by a female at Monroe 21 Apr 1949 (R.B. Emery *et al.*) and a male at Brookline from 3 Jun at least to 30 Sep 1949 (Conti).

1950 to present. Continued increase in most parts of the state. A male was at Winchester 5 Jun 1955 (V. Staples) and a female appeared at Walpole 13 May 1956 (V.S. Wright *et al.*). In the spring of 1957 a major invasion began with 3 appearing at Tilton 31 May–1 Jun 1957 (G.L. Fox *et al.*). Also, schoolchildren reported seeing a male at Meriden all summer where 1 was confirmed in Nov (Mrs. Rosa). By October, reports began to come in of birds at Keene 20 Oct 1957 (M.L. Fuller *et al.*), quickly followed by reports from Moultonborough, Claremont, Tilton, Haverhill, and Intervale. A high proportion of the earliest arrivals were concentrated in the Connecticut River valley. By spring of 1958, birds were found at Concord, Merrimack, and Lebanon in the Merrimack River valley, and by 1959 at Campton, Antrim, Jaffrey, Pena-

cook, and Hanover. The first proved breeding with observed young was at Hanover in 1959 (Haille). A second and greater invasion began in fall of 1961 which extended the distribution of the species to many more parts of the state, north as far as Colebrook (W. Cummings) and finally into the coastal region. Yet another wave occurred in the fall and winter of 1966–1967 by which time the number of known birds in New Hampshire had risen from 7 in 1959 to 60 in 1966 (Howard 1968) to 442 in 1975 (ASNH *Newsletter*) to 1250 in 1983 (T. Richards *in* Foss 1994).

Distribution widened and numbers increased sharply mid- to late 1980s. The species was recorded on CBCs as far north as Pittsburg (1978, 1979) and Errol (1984), and 2 were at Pittsburg 28 Feb 2005 (B. Fish). It has not been confirmed breeding north of the White Mountains though it probably does so sparingly in the Connecticut River valley. The *Atlas of Breeding Birds* project in 1981–1986 found confirmed or probable breeding in 59 priority atlas blocks (Foss 1994) though the actual number of breeding pairs was certainly much higher. The species is now widespread over southern New Hampshire except for the southwestern highlands and for areas north of the White Mountains, suggesting that “extensive forests, higher elevations and colder temperatures may be important limiting factors” on its distribution in the state (T. Richards *in* Foss 1994). Its breeding population is listed as increasing by Hunt (2009b), and long-term New Hampshire BBS population trend data show a rapid increase of +9.8% per year in 1966–2009 and a less rapid rise of +4.8% per year in 1999–2009 (Appendix IV). Average statewide CBC totals were 544 in the 1990s and 1016 in the 2000s, with peak counts of almost 1400 in 2006 and 1319 in 2008.

Rose-breasted Grosbeak *Pheucticus ludovicianus*

Status. Common breeder and migrant virtually throughout the state, even at fairly high elevations and in the northernmost parts of Coos County.

Early reports to 1950. Not mentioned by Belknap (1792), so the first recorded occurrence of this species appears to be the description by Samuels (1867) of it being generally distributed but not common anywhere. In the Lake Umbagog region, Brewster found it a “rather common summer resident, varying in numbers” between extreme dates of 15 May (1896) and 15 Sep (1900) in 1871–1909 (Griscom 1938). Allen (1903) thought it an uncommon summer resident generally, but Thayer (1912) found it common from early May to September at Dublin. At Hanover, Lord (1918) found it regularly 1912–1917, his earliest spring date being 9 May and average arrival May 14. Abbott (1949) recorded it nesting at 2000 feet on Mt. Monadnock. Whittle (1938) recorded a large increase in the Peterborough area in 1938.

In the Merrimack River watershed, 1 was collected at Hollis by J. Dwight in Jul 1879 (AMNH #364712). Dearborn (1898) thought it an “uncommon summer resident” in Belknap and Merrimack Counties. Howe (1901–1903) found it a “rather common summer resident” at Bridgewater, but Marble (1907) called it “rare” at Crawford Notch, only having 2 records in July. Dearborn (1905) considered it a “scarce summer resident” at Northfield. Goodhue (1922) said it was then a rather common summer resident and breeder at Webster though prior to 1885 he had considered it rare “in the central part of the state.” White (1924b) thought it a “fairly common summer resident” at Concord, his earliest in spring being 5 May. Later (1937) he called it simply “common,” it having increased in the intervening 13 years.

In the coastal region, Dearborn (1903) thought it only a local resident which was then unknown to breed. Reports submitted to RNEB in 1936–1949 show it to be a regular spring migrant arriving as early as 1 May 1946 at Concord (H.W. Parker), more usually in the second week of May. It was usually gone by mid-September and the latest was 1 at New Hampton 30 Sep 1944 (V.H. Hebert). Up to this point, it was not known at the Isles of Shoals.

In summary, though present in much of the state south of the White Mountains from colonial times to the mid-1800s (especially in the 2 major river valleys), it apparently was not common (Samuels 1867). By 1900 it appears to have become more widely distributed and numerous, and during the 1920s and 1930s began to increase further in numbers and spread its range farther north.

1950 to present. It continued to increase 1950–1980 as forest regeneration spread, but was listed as declining in hardwood and mixed forest since 1990 by Hunt (2009b). Since 1950 it has been found earlier in spring and later in fall.

Spring. Earliest known spring record is 1 at Webster 18 Mar 1992 (D. and B. Peck); mean arrival 1960–2009 was 29 April. Peak migration period is the second and third weeks of May and a high count in this period was 14 at New Hampton 17 May 1960 (V.H. Hebert *et al.*). Counts of 10 or more were typical until about 2000 when peak counts began to average 12–15. Extreme dates known at the Isles of Shoals are 1 at Star Island 11 May 1975 (ASNH field trip) to 1 at White and Seavey Islands 4 Jun 2005 (M. Waniga *et al.*). The elevation record for the state is 1 photographed at the very summit of Mt. Washington at 6288 feet 15 May 2005 (T. Markle; NHBR 24 [1] back cover).

Summer and breeding. Ridgely (1977) found it a “widely distributed and fairly common breeder” near Squam Lake, and Cohn-Haft (1983) thought it “a common breeder” at the Second College Grant in the north. The

Atlas of Breeding Birds project in 1981–1986 recorded breeding in 156 priority atlas blocks statewide, spread widely and quite uniformly in every county except for the very highest parts of the White Mountains, and including the northernmost parts of Coos County. BBS data show an increasing number of presumed nesting birds through the 1960s and 1970s, but long-term New Hampshire BBS population trend data show small declines in 1966–2009 and 1999–2009 (Appendix IV). Resident birds typically begin leaving breeding areas by mid-August.

Fall. Peak fall migration period is typically the second and third week of September though small numbers often are found into the first and even the second week of October. Peak count in fall on the mainland is 15 at the coast 30 Aug 1965 (R.W. Smart *et al.*). Latest known reports for the Connecticut River valley are 1 at Charlestown 8 Nov 1976 (W.W. Kidder) and 1 at Bradford 9 Dec 2008 (M. Halsted), and latest for the Merrimack River valley is a male at Concord 14–24 Nov 1969 (H.B. Miller, E.T. Densmore). Extreme fall dates for Star Island are 18 Aug 1981 (J. Ginaven), and 1 on 6 Oct 1974 (ASNH field trip). A surprising 25+ there 10 Sep 1972 (D.W. Finch *et al.*) was the highest known single-day count for the state.

Winter. Six reports: 1 at Newton 9 Dec 2003 (P. McFarland), a female at Plymouth 6–10 Dec 1983 (R. Mitchell) and probably the same bird at Plymouth at another site 13 Dec 1983 into Feb 1984 (M. Piette), 1 at Hinsdale 15 Jan 1976 (L.P. Mullen), 2 at Hancock 16 Dec 1989 (H.M. Cadot), 1 at Rumney 28 Dec 1990 (CBC), and 1 at Derry 10 Jan 2004 that continued there until 2 Apr 2004 (B. Horton, D.J. Abbott *et al.*).

Black-headed Grosbeak *Pheucticus melanocephalus*

Status. Vagrant from the west. Four records. One accepted record in VT in 1978 (C.C. Rimmer pers. comm.), at least 22 records for MA (Veit and Petersen 1993, BO database 2010), and over 6 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Early report to 1950. Goodhue (1922) records the following: “Mr. A. A. Eaton writes me as follows ... [about] the occurrence of a pair of Black-headed Grosbeaks... a few years ago. ‘I observed ... [the pair] several times at Seabrook one summer. I tried repeatedly to get a close view and finally saw the male ... near enough to note his markings. I was familiar with the bird in California and to assure myself went and got out my skins. It was a perfect match, and I know no other bird that approaches it.’ It seems very strange that a pair of these birds should wander so far from home... Of course there is a possibility that they were escaped cage birds, but it seems hardly

probable that such was the case.” Eaton was well known as an experienced collector to several early New Hampshire ornithological writers.

1950 to present. A female was at Durham 27 Jan 1976 (D.J. Abbott, E.W. Phinney *et mult.*), an adult male was reported at Plymouth 16 May 1978 (C.M. Stewart), and 1 at Derry 31 Oct to 3 Nov 2003 (S. Gould *et mult.*)

Blue Grosbeak *Passerina caerulea*

Status. Rare but increasingly regular visitor from the south and west.

Early reports to 1950. The first known state record is that of Barry (1896) who found 1 at Derry 26 May 1894 which was not collected but observed as close as 10 feet. Forbush (1929) listed 2 reports with the comment that they were “unsubstantiated,” meaning that the birds were not collected or photographed. Other reports include a pair that nested in Jackson in 1917 (Mrs. F. Abbott *fide* H. Abbott *in litt*) and “one or more birds seen each summer” at Franklin in 1927, 1928, and 1929 (Mrs. D. Atwood *fide* F.C. Campbell *in litt*). One was seen at Pittsfield 13 Jun 1930 (G.M. Davis), and 1 was at Concord 30 May 1935 (W.A. Colby, G. Jenkins).

1950 to present. Significant increase in reports. Found much more commonly in spring than at other seasons.

Spring. Earliest known arrival is 1 at Tamworth 19 Apr 1984 (*fide* M.N. Damon), and latest in spring is 21 Jun 1996 at Jackson (P. Howe *et al.*). Other reports include 1 singing male in the Pemigewasset Wilderness about 20 Jun 1960 (H.C. McDade), a singing male at Durham 20 May 1972 (A.C. Borrer, J.E. Cavanagh), 1 at Goffstown 24 Jun 1972 (H.W. Parker), and 1 at Dublin 3 May 1974 (Mrs. F.L. Weiss *et al.*; Allison and Allison 1979). From 1975–2009 there are at least 20 spring reports between the above extreme dates from East Kingston (1975), East Rochester (1975), Rye (1976), Plymouth (1983), Enfield (1983), Londonderry (1996), Merrimack (1984), Deerfield (1997), Keene (1984), New Loudon (1984), Swanzey (1991), Hudson (1996), Wilmot (1997), Milford (1997), Goffstown (1999), Wentworth (1996), Frankestown (2003), Haverhill (1996), Charlestown (2003), Hanover (2006), Concord (2007), and Bristol (2007).

Summer. One was at Bridgewater 28–30 Jul 1961 (S. Howard *et al.*), and 1 at Concord 28 Aug 1981 (A. Mulligan, D. Barter), the latter possibly an early fall postbreeding disperser. Also 1 was at New Hampton 28 Jul 1990 (L. and E. Emmons) and a male at Hollis 2–30 Jul 1992 (J. McCarthy, D. Deifik *et al.*).

Fall. There were single birds at Hampton 30 Sep 1954 (P. Keenan), Star Island 3 Oct 1965 (R.W. Smart *et mult.*), Durham 22 Sep 1985 (M. Davis, M.J. Murray), Rye 18 Oct 1987 (D.J. Abbott), 2 at Exeter 25 Sep 1994 (A. and B. De-

lore), Kensington 23 Sep 2002 (D.W. Finch), 1 in East Conway 12 Sep 2009 (R.P. Fox, S. Lee), and 1 at Stratham 10–2 Oct 2010 (S.R. and J. Mirick *et al.*), the latest known in fall.

Indigo Bunting *Passerina cyanea*

Status. Common and widespread breeder and migrant south of the White Mountains and farther north in the Connecticut River valley.

Early reports to 1950. Apparently the first specific state records are those of J. Dwight who collected 4 at Hollis from May to July between 1875 and 1883. Goodhue (1877a) called it a common summer resident and breeder at Webster, Morrison (1883) noted its presence at Windham, Faxon and Allen (1888) thought it common at Bethlehem and Franconia, Bates (1891) found 1 at Franconia 27 Jun 1890, and Howe (1901–1903) thought it a very common summer resident at Bridgewater. Allen (1903) considered it a “rather common summer resident,” especially in southern New Hampshire, but uncommon at Lake Umbagog. Griscom (1938) reported Brewster’s opinion that in 1871–1909 at Lake Umbagog it declined from being a moderately common though local summer resident and breeder to absent after 1903; Brewster’s extreme dates there were 20 May (1896) to 4 Oct (1888). Thayer (1912) called it fairly common at Dublin but primarily at lower elevations in the town. In the Jefferson area, Wright (1911) described it as a “rather common summer resident” and Lord (1918) found it regularly at Hanover 1912–1917, his earliest being 18 May and average arrival there being 20 May.

In the Merrimack River watershed, Dearborn (1898) thought it common and (1905) regular at Northfield. For Marble (1907) it was a straggler at Crawford Notch with only 2 records, and Goodhue (1922) called it a common summer resident at Webster, reporting an early spring migrant found dead on 11 Apr 1922. White (1924b) styled it a “common summer resident” at Concord, his earliest in spring being 16 May and average arrival 22 May. Thirteen years later, White (1937) thought it had declined and was becoming scarcer at Concord; his latest there was 1 Oct 1920. Bagg and Eliot (1937) also noted signs that the species was diminishing and withdrawing from parts of the state.

In the coastal region, Dearborn (1903) considered it “fairly common” at Durham. It appears to have been unknown at the Isles of Shoals in this period. Reports submitted to RNEB in 1936–1949 show a regular pattern of arrival by mid-May, the early exceptional date being single birds on 20 Apr 1943 after a spring storm at Hanover (W.E. Lanyon *et al.*) and Hinsdale (P. Anderson), and an exceptional count of 19 at New Hampton 25 May 1948 (V.H. Hebert). Usual departure reported was mid-Sep-

tember, latest record being 1 at New Hampton 28 Oct 1949 (V.H. Hebert).

In summary, this species is near the northern boundary of its range in New Hampshire, and was common to abundant in many parts of the state in the late 1800s, but its distribution apparently pulled back from the far north in the 1900–1910 period and again from the central part of the state in the mid-1930s. It then recovered and became common again virtually statewide by 1949 except in the far north.

1950 to present. Its breeding population has been stable (Hunt 2009b), possibly slightly higher since about 1990.

Spring. Earliest known spring arrivals are 6 Apr 1993 at Sunapee (B. Burdett, F. Hammond), 10 Apr 1962 at Concord (Purvis *fide* M.N. Dodge), and 11 Apr 1993 Rye (B. McCarthy). There are several other first arrivals in the last 3 weeks of April, though mean first arrival is 7 May. Peak spring migration period is typically the middle 2 weeks of May but can vary considerably; in some years some birds may not arrive until early June. Peak high count other than the count in 1948 is only 10 at Nashua 11 Jun 1972 (M.G. Bouchard). Single birds at Star Island 8–9 Jun 1972 (A.C. Borrer), 8 Jun 1999 (R.W. Suomala *et al.*), and 1 banded 8 Jun 2000 (R.W. Suomala) were late migrants.

Summer and breeding. Nests virtually statewide south of the White Mountains though there is evidence from BBS data that numbers vary over time, as in the early 1970s when numbers dropped sharply before recovering again. Ridgely (1977) called it a “widespread but uncommon breeder” in the Squam Lake region, Cohn-Haft (1983) found it a rare breeder at the Second College Grant, and Allison and Allison (1979) thought it a “fairly common summer resident” at Dublin. Occasionally birds were found in breeding season as far north as Pittsburg (1961, 1962, 1963, 2001). In the 1981–1986 *Atlas of Breeding Birds*, however, there were few sites in Coos County other than along the Connecticut River valley north only to Colebrook (Foss 1994), though breeding was confirmed or thought probable in 95 priority atlas blocks. Long-term New Hampshire BBS population trend data show a small increase in 1966–2009 but a sharper increase (+6.4% per year) in 1999–2009 (Appendix IV). The state elevation record is 1 at Livermore at 2600 feet in Jul 1962 (T. Richards). Some southbound migration movement often occurs by the last week of August.

Fall. Peak fall migration period is usually the last 3 weeks of September, and most birds are gone by the end of the month. Peak counts are 80 at Concord 7 Sep 2009 (P.D. Hunt), 55 at Concord 13 Sep 2008 (P.D. Hunt), 50 there 21 Aug 2008 (S. Brand), and 50 there 31 Sep 2008 (R.W. and M. Suomala), usual counts being in the 4–10 range. Occasional birds are found into mid-October and latest known are 1 at Plymouth 3 Nov 1989 (S.A. Fogleman), 1

at Walpole 9 Nov 2010 (P. Brown) and 1 at Hanover 6–11 Nov 2002 (V. and R. Lunardini). One was banded at Star Island 29 Sep 2000 (R.W. Suomala).

Painted Bunting *Passerina ciris*

Status. Very rare visitor from the south; 11 records, all of males, the first in 1960. Two accepted records for VT (C.C. Rimmer pers. comm.), over 50 records for MA (Veit and Petersen 1993, BO database 2010), and over 25 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

Spring. Single birds at Contoocook 8 May 1973 (C.B. Wallace *et al.*), Bow 6 Mar 2008 (E. Robinson), Jefferson 30 May 2008 (J. and T. Kennison), New Castle 13 Jun 2001 (S.R. Mirick, D.J. Abbott *et al.*), Portsmouth 2 Jun 2009 (D. Mooney), and by far the earliest 11 Mar 2011 at Deering (P. Sunderland).

Summer. There was 1 about 6–7 Aug 1976 at Tilton (F. Nadd *fide* V.H. Hebert) and 1 at New Hampton 21 Aug 1960 (R.W. Smart).

Fall. One was at Hopkinton 25 Sep 2005 (C. Denton, D. Bonner II) and 1 at Concord 1 Oct 2007 (R.A. Woodward).

Winter. One was at Newmarket 22 Jan 2006 (S.R. and J. Mirick, D.B. Donsker).

Dickcissel *Spiza americana*

Status. Uncommon visitor from farther west and south at all seasons but never known to have bred. Has become much more frequent since 1950.

Early reports to 1950. The first known state record is that of White (1919, 1924b, 1937) who collected 1 at Concord 13 Oct 1918 but the specimen cannot now be found. A male was at Jaffrey 22 and 26 Apr 1944 (L. Cutter). Gross (1956) and Hurley and Franks (1976) state that this species was common as close as MA where it bred from 1835 to 1877 but then withdrew its breeding range westward until returning eastward again about 1918; since then it has become more common in the northeast, especially along the coast in fall, though not recorded there from New Hampshire before 1950.

1950 to present. Has been an annual visitor since 1952, becoming moderately numerous in some years, both inland and at the coast, especially in fall. Has wintered and has occurred in late summer; it never has been thought to breed. Masterson (2004a) summarized 217 New Hampshire reports involving 265 individual birds in 1963–2003, clearly illustrating the rapid decline in records 1963–1977 which mirrored about a 30% decline across most of the species’ breeding range. Most of this decline was due to persecution on its South American

wintering grounds, especially in Venezuela, where huge flocks concentrate in rice and other grain-growing areas. Distribution of records in New Hampshire has been primarily in and south of the Lakes Region, especially in the coastal region, exceptions being 5 reports north to Monroe and Littleton in the Connecticut River valley (Masterson 2004a).

Spring. Earliest known in spring is 1 on 11 Mar 1967 at North Hampton (E.W. Phinney *et al.*) but it may have been a wintering bird still lingering; this is also true for several other mid-March reports. To the extent that there is a peak arrival period in spring, it is the last week of March and the first 2 weeks of April. Latest known in late spring is a singing male at Rochester 10–11 Jun 1998 (R.A. Quinn, S.R. Mirick). There were reports of 12 individual birds between March and June in 1952–1976, but if anything it has occurred more frequently since the 1990s: 14 birds alone from 2000–2004.

Fall. Earliest known fall arrival is 15 Aug 1997 at White and Seavey Islands (R.W. Suomala, L. Deming). Birds are found regularly at the coast and inland from the last week of August into mid-November. Masterson (2004a) reports 62 records in October, by far the highest in any month, versus about 30 in each of September, November, and December. Especially heavy fall flights have been at least 10 in 1960, 34 in 1963, 18 in 1969, and 11 in 2009; in most years numbers are in the 2–4 range. Often appears at feeding stations in late November to late December. Regular at Star Island where extreme dates are 30 Aug 1953 (W. Taber) to 3 Nov 1968 (W.C. Chisholm).

Winter. A few occasionally linger into January and February, numbers varying from 1 or 2 to as many as 7 in 1970 following a heavy fall flight.

FAMILY ICTERIDAE

Bobolink *Dolichonyx oryzivorus*

Status. Fairly common but slowly declining breeder; still common migrant.

Early reports to 1950. The first mention of this species for the state was that of Belknap (1792) who included the “Boblincoln, *Emberiza oryzivora*.” One was collected at Hollis 22 Jul 1876 by J. Dwight (AMNH #385318); it was listed as present and presumably common in Windham (Morrison 1883), Swanzey (Read 1892), Hanover (Lord 1918), and Surry (Kingsbury 1925). Thayer (1912) considered it fairly common near Dublin and later (1914) wrote that it was common near Keene and had not shown a decline there since 1885. Allen (1903) called it a common summer resident and abundant migrant in most parts of the state.

Wright (1911) listed it as a “common summer resident” found up to 1600 feet elevation in the Jefferson area. In the Merrimack River watershed, Dearborn (1898) considered it an “abundant” breeder in Belknap and Merrimack Counties, and Dearborn (1905) found it “common” at Northfield. Goodhue (1922) noted that it had “greatly declined” at Webster from 1900 to 1920 though at Concord White (1924, 1937) thought it still a common summer resident.

In the Lake Umbagog region Brewster (1937) said it was still common but stated that it had been declining in southern New England for “thirty years or more.” In the coastal region, Dearborn (1902) called it “common” near Durham, noting his earliest spring arrival there on 1 May. At the Isles of Shoals, Thaxter (1894) reported it there without identifying on which islands. Wright (1937) only listed it as a “late summer migrant” at the Shoals but Allan (1931) did not mention it at all. Reports submitted to RNEB give an average spring arrival date of 9 May and an average fall last record date of 10 Sep in 1937–1949, a little later in spring and earlier in fall than since 1950. Vera H. Hebert speculated that Bobolinks used Beaver meadows as breeding sites before the clearing of the forests 1700–1900 and they have been observed doing so at Leonard Marsh, Lake Umbagog, as recently as 18 Jun 1999 (R.A. Quinn).

In summary, this species became increasingly common as the original forest cover was cleared during the colonial era and reached its peak abundance by the mid- to late 1800s when the greatest number of acres in the state was under agriculture. It then declined from very common to only common by 1920 and has continued to decline until today as reforestation in much of the state has occurred.

1950 to present. Though still common, continued modest decline as reforestation and development have replaced grasslands and pastures, as mowing practices have changed on agricultural lands, and probably some deterioration of its traditional wintering grounds. Breeding population listed as declining by Hunt (2009b).

Spring. Earliest known spring arrival is 1 at Portsmouth 30 Apr 1979 (E.K.D. Lewis, L.S. Lewis), and mean arrival date is 6 May. Peak migration period is the last 2 weeks of May and peak counts in this period are 300 at Seabrook 18 May 1986 (R.A. Quinn), 130 at Milford 13 May 1995 (M. and R.W. Suomala) and 100 at Concord 24 May 1958 (H.B. Miller *et al.*). At least 200 were reported in a major statewide fallout 11–13 May 1996 (M. Suomala *et al.*). Late migrants at the Isles of Shoals were 9 at Star Island 1 Jun 1969 (ASNH field trip) and 1 male and 5 females there 8–21 Jun 1972 (ASNH field trip). Late June migrants on the mainland cannot be distinguished from summer residents.

Summer and breeding. Continues to be a relatively com-

mon and widely distributed breeder in the state. In the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or considered probable in 121 priority atlas blocks (Foss 1994), principally south of the White Mountains and in the Connecticut River valley as far north as Colebrook and occasionally Pittsburg. Ridgely (1977) considered it a “fairly common breeder” near Squam Lake and increasing locally, though its numbers have been stable to lower there since the 1990s (R.S. Ridgely pers. comm.). Allison and Allison (1979) reported it common near Dublin, and Cohn-Haft (1983) listed it as a locally common breeder near the Second College Grant in northern Coos County. Richards (2000) says that it has decreased noticeably in the Dublin area since 1911. Numbers reported on statewide BBSs have also been stable to fractionally lower since the 1990s, and New Hampshire BBS population trend data average a decline of about 1.8% per year in 1966–2009 and 1999–2009 (Appendix IV). A statewide grassland bird survey in 1997 found a total of at least 1000 birds (P.D. Hunt).

Fall. The earliest suspected southbound migrants have been 1 on White and Seavey Islands 8 Jul 1998 (R.A. Quinn, J. Ellis). Fifty-four at Walpole 12 Jul 1997 (P.D. Hunt) and 90 at Northwood 25 Jul 2008 (T. Bronson *et al.*) seem likely to be birds staging before migration. Peak fall migration period is the last 2 weeks of August and the first week of September, and peak counts in this period are 260 at East Kingston 27 Aug 1979 (D.W. Finch), 250 at Rochester 12 Aug 2004 (S.R. Mirick), and 200 at Hanover 26 Aug 1962 (H. Weber). Fall counts over 75 are scarce. Most birds have gone by the middle of September and records in October are unusual. Latest known mainland records are 1 at Milan 25 Oct 1989 (G.W. Gavutis, Jr.), 1 at Laconia 26 Oct 1968 (H.C. Anderson), and a female at Greenland on the exceptional date of 3 Dec 1994 (S.R. Mirick, P.D. Hunt *et mult.*). Occurs regularly at Star Island in fall, extreme dates there being 18 Aug 2000 (R.W. and M. Suomala) to 21 Oct 2007 (E.A. Masterson *et al.*) and peak count being 20 on 2 Sep 2000 (R.W. Suomala, J. Weldon).

Red-winged Blackbird *Agelaius phoeniceus*

Status. Common to abundant and widespread migrant and breeder, somewhat increased from 1900 to date.

Early reports to 1950. First listed for New Hampshire by Belknap (1812). The next earliest state record known is of 1 collected at Warren 7 Jan 1878 by M. C. Harriman (Goodhue 1885), also the first known winter record. One was collected by J. Dwight at Hollis 23 Jun 1882 (AMNH #385944). Allen (1903) called it a “rather common, but local summer resident.” G. H. Thayer (1912) reported it common in the Dublin area and A. H. Thayer (1914) said there had been essentially no change in its population in the Keene area from 1885 to 1914. Wright (1911) found

it “rather uncommon” but “steadily gaining in numbers” in the Jefferson area, noting breeding birds at 1400 feet elevation near Lisbon and a flock of 700 migrating 2 Sep 1909. Lord (1918) found it regularly at Hanover 1912–1917, arriving as early as 30 March and average arrival by 6 April. Farther north, Brewster (1937) found it a “locally common summer resident” at Lake Umbagog between extreme dates of 20 April and 22 October in 1871–1909.

In the Merrimack River valley, Dearborn (1898) found it common in Belknap and Merrimack Counties, noting that birds left for the coast about 20 August, and (1905) called it an abundant summer resident at Northfield. At Concord, White (1924b) styled it a common summer resident and later (1937) called it an abundant transient, his latest record there being a surprisingly early 31 Aug 1927.

At the coast, Dearborn (1902) considered it common around Durham, Allan (1931) had records for 12 Jul 1929, 2 Apr 1930, and 12 May 1930 at the Isles of Shoals, and Wright (1937) recorded it at Appledore in 1935 and 1936. Reports submitted to RNEB in 1937–1949 show spring migrants arriving regularly by mid-March, earliest being 1 at Exeter 6 Mar 1946 (Mrs. N.L. Hatch) and 8 at Ossipee 8 Mar 1946 (E.E. Pratt), her earliest record there since 1925. In fall, birds were noted from 1937 to 1949 often into late October and occasionally into early November, a flock of 540 recorded at Monroe 26 Oct 1946 (R.B. Emery). One at Monroe 27 Jan 1945 (R.B. Emery, I.F. Hunt) was only the second known winter record before 1950.

In summary, this appears to have been a common species statewide between 1900 and 1950.

1950 to present. Little change in overall numbers but earlier spring arrivals and later fall departures than in the early 1900s. Its population trend is listed as decreasing Hunt (2012).

Spring. In recent years, overwintering birds present into mid- to late February make early migrants hard to distinguish. Earliest suspected migrants known are a single male at Kensington 4 Feb 1999 (G.W. Gavutis, Jr.), 25 there 18 Feb 1999 (G.W. Gavutis, Jr.), and 120 at Hooksett 19 Feb 1981 (R.A. Quinn). Mean general spring arrival has been 2 March since 1950. Peak migration period varies with weather, sometimes occurring later in late springs; males arrive first, sometimes 1–2 weeks ahead of large numbers of females. In general, peak numbers are flocks encountered from the last week of March through the third week of April. Highest known numbers are 5000 as far north as Dalton 20 Apr 1972 (R.J. Bradley), 3500 at Haverhill 9 Apr 1972 (R.J. Bradley), and several flocks entering an evening roost site totalling 5985 which included some Brown-headed Cowbirds at Portsmouth 9 Apr 2001 (S.R. Mirick). Counts over 2000 are uncommon, but counts in the 1000 range are not. As many as 400 were found in Coos County as early as 2 Apr 1967

(V.H. Hebert *et al.*). Migrants are known at Star Island in spring from 10 seen there 11 May 1969 (ASNH field trip) to at least 1 there as late as 21 Jun 1972 (ASNH field trip). Extreme late migrants cannot be distinguished from summer residents.

Summer and breeding. This species breeds widely all over the entire state with the exception of the highest elevations of the White Mountains. In the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or considered probable in 161 priority atlas blocks statewide (Foss 1994). Long-term New Hampshire BBS population trend data show a small decline in both 1966–2009 and 1999–2009 (Appendix IV). Postbreeding flocks occasionally accumulate by late July: a flock of 45 thought possibly to be migrants was at Ossipee 23 Jul 1951 (E.E. Pratt), and 285 were at Dover 17 Jul 2003 (M. Suomala). Males start to drift away from most breeding areas by early August, females and young of the year by the last week of August; they often form flocks in the 50+ range. In the Isles of Shoals, 1 or 2 pairs typically breed at Appledore Island, ME (Borrer and Holmes 1990), and occasionally visit the New Hampshire islands. Postbreeding flocks can begin to accumulate by mid-August: 1000 going to roost at South End Marsh, Concord, 11 Aug 2005 and 3000+ there 11 Aug 2006 (both R.A. Quinn).

Fall. Southbound migration begins by mid-September but peaks in October; high counts at this season are 2000 at Concord 7 Sep 2005 (I.C. MacLeod), 1000 at Hanover 7 Oct 1961 (H. Weber), 1000 at Haverhill 5 Nov 2003 (S.B. and M. Turner), and the most exceptional evening roost site flocks at Hinsdale of 10,190 on 27 Sep 2007 and 12,000 on 13 Oct 2007 (both H. Galbraith, E.A. Masterson *et al.*), though counts over 700 are unusual. Most flocks were in the 50–100 range until the late 1990s but have increased since to a usual range of 100–350. Though most birds are gone by mid-November, an exceptional count was 3500 at New Boston 17 Nov 2000 (C. Carr). Mention should also be made of the huge flocks of “blackbirds” reported in late October and early November that certainly contain significant numbers of this species; see the Common Grackle species account.

Winter. A few usually linger into early winter and are found on the Coastal CBC in late December or early January and less often even north of the White Mountains at Errol and at various towns in both the Connecticut and Merrimack River valleys. In recent years, birds have regularly overwintered at the coast and also at a few inland locations such as Laconia, Manchester, Walpole, Deering, Londonderry, Nashua, and New Hampton. One hundred sixteen birds were reported from 13 localities in Feb 2009 (v.o.). Late winterers or early migrants were 22 at Hollis 22 Feb 1991 (B. Mack), 20 at Hinsdale 23 Feb 2008 (E.A. Masterson), 55 at Durham 24 Feb 1997 (S.R. Mirick), and 16 at Plymouth 25 Feb 2002 (J. and R. Williams).

Eastern Meadowlark *Sturnella magna*

Status. Somewhat sparsely distributed summer resident and seasonal migrant. Appears to have increased modestly 1900–1960 followed by a significant decline. A species of Special Concern in New Hampshire.

Early records to 1950. First listed for the state by Belknap (1792) as the “Marsh Lark, *Alauda magna*,” probably inhabiting larger Beaver meadows in precolonial times. The next record appears to be that of Goodhue (1885) who recorded that 1 wintered at Webster in 1874–1875. Cram (1899) reported 1 at Hampton Falls in Feb 1899. Allen (1903) said it was only present in summer, was uncommon in the southern part of the state, was rare north to the White Mountains, and occurred in the Connecticut River valley, once having nested as far north as Lancaster in 1901. Thayer (1912) called it rare near Dublin though fairly common in the Keene valley area. Dearborn (1902) called it local and uncommon near Durham in the coastal region, usually appearing in March. Wright (1911) described it as a “rather rare local summer resident, but becoming less rare” in the Jefferson area, 5 pairs having nested in 1908. Lord (1918) reported his earliest spring record 1912–1917 on 17 March at Hanover and average arrival as 27 March. Shelley (1932b, 1934e) reported birds wintering at East Westmoreland 24 Dec 1931 and at Winchester 1931–1932 and 1932–1933.

In the Merrimack River watershed, Dearborn (1898) called it local and scarce in Belknap and Merrimack Counties and (1905) of “irregular distribution” in Northfield. In Concord, White (1924) considered it “well distributed” and noted 3 on 23 Feb 1921. But 13 years later, White (1937) called it a “common summer resident, casual in winter” at Concord, suggesting an increase; his latest fall record there was 26 Oct 1934. Unaccountably, Goodhue (1922) did not mention it at all for Webster.

At the Isles of Shoals, Allan (1931) saw 1 on 2 Apr 1930 without mentioning on which island; Wright (1937) did not list it at all. Brewster (1937) never found it in the Lake Umbagog region either in New Hampshire or ME. Reports to RNEB in 1937–1949 show a pattern of regular occurrence, usually arriving in spring by the last week of March and remaining in fall until mid-October; earliest in spring was 1 at Gilford 14 Mar 1946 (G. Emilio) and latest in fall was 2 at West Lebanon 15 Nov 1947 (L. Cole). First report for the Lake Umbagog region was 2 at Dummer 23 Mar 1949 (S.K. Harris *et al.*). Two winter reports in this period were 1 at Manchester 6 Jan 1939 (E.J. Goellner) and 1 at Hanover 5 Feb 1939 (R.L. Weaver).

In summary, this species appears to have increased slightly in numbers and distribution, wintering irregularly, from 1900 to 1949 despite a decline of suitable habitat during those years.

1950 to present. Some small increase until the late 1960s

followed by a significant decline to date, principally due to reforestation, conversion of agricultural lands by development, and changes in mowing practices. Breeding population listed as declining by Hunt (2009b, 2012).

Spring. Wintering birds were formerly frequent enough to obscure very early migrant dates to some degree and this continues to be the case. Reports of 1 at Concord 21 Feb 1955 (H.F. Everett) and 1 at Nottingham 22 Feb 1955 (G. Baker *et al.*) could have been extreme early migrants. Otherwise, earliest certain migrants are 18 at Seabrook 2 Mar 1953 (*fide* V.H. Hebert) and mean spring arrival is 17 March since 1950. Peak migration period is the last week of March and the first week of April. High spring count is 19 at Littleton 7 Apr 1963 (R.J. Bradley); there have been no spring counts over 10 since 1970. Spring migrants at the Isles of Shoals are 4 at Star Island 20 Mar 1966 (R.W. Lawrence *et al.*) and 1 at White and Seavey Islands as late as 16 Jun 2006 (D. and M. Hayward *et al.*). Extreme late spring migrants on the mainland cannot be distinguished from summer residents.

Summer and breeding. Summer records for the state were widespread, including north to Pittsburg and the Lake Umbagog region by the mid-1960s, but numbers reported for the *Atlas of Breeding Birds* project began to drop sharply by the early 1970s. Robbins *et al.* (1986) document a sharp population decline in the eastern United States in 1966–1979, especially after the severe winter of 1976–1977. Ridgely (1977) called it an “uncommon and local breeder” near Squam Lake, but it is now extirpated from the Squam Lake/Sandwich region and has been at least since the late 1970s (R.S. Ridgely pers. comm.). Allison and Allison (1979) said it no longer nested near Dublin. In the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or believed probable in 69 priority atlas blocks, primarily in the coastal region, the Merrimack River valley south of the Lakes Region, and the central Connecticut River valley (Foss 1994). A decline has continued since 1990: Richards (2000) said it has become relatively scarce in the Jefferson area, and the same can be said for much of the rest of the state. Breeding is concentrated in the general coastal region (WAP 2005). Long-term New Hampshire BBS population trend data show a sharp decline averaging about 7.7% per year in 1966–2009 and 1999–2009 (Appendix IV). The highest elevation recorded for the state is a pair at 1500 feet at Crawford’s Purchase, White Mountains, in summer of 1960 (T. Richards).

Fall. The earliest possible fall migrants cannot be distinguished with certainty from summer residents, but some movement is thought to begin by late August. Peak migration period is the last 3 weeks of October, and peak count in this period is 45 at Greenland 20 Oct 1966 (E.W. Phinney *et al.*). A few late fall (November–December) birds linger. An inland and northern report was at Sand-

wich 30 Nov 1999 to at least 2 Jan 2000 (A.J. Vazzano, R.S. Ridgely *et al.*). Flocks often accumulate at favored locations and remain into early winter in milder seasons as 35 in the coastal region 23 Dec 1967 (CBC). Extreme dates for migrants at Star Island are from 1 there 7 Oct 1973 (R.S. Holt *et al.*) to 1 there 12 Nov 1967 (ASNH field trip).

Winter. By the 1950s this species became occasional in small numbers in the coastal region at least into January and occasionally into February. Inland, birds have wintered successfully on occasion but less frequently since the 1970s.

Western Meadowlark *Sturnella neglecta*

Status. Vagrant from the west. Four records; the identity of all birds was confirmed by hearing their voices. The first state report was 1 at Newport 20 and 22 Jul 1960 (T. Richards *et al.*). Other single-bird reports include 1 at New Hampton 19 Oct 1964 (V.H. Hebert *et al.*), at Hampton 16 Jun to 25 Jul 1969 (R.W. Smart *et mult.*), and at Greenland 20 Apr 1970 (E.W. Phinney *et mult.*). One hypothetical record for VT in 1987 (C.C. Rimmer pers. comm.), over 25 records for MA (Veit and Petersen 1993, BO database 2010), and 6 records for ME (ME-BRC website; P.D. Vickery pers. comm.).

Yellow-headed Blackbird *Xanthocephalus xanthocephalus*

Status. Irregular visitor from the west. Thirty reported, most often in spring and fall. Four accepted records for VT 1987–1999 (C.C. Rimmer pers. comm.), over 200 records for MA (Veit and Petersen 1993, BO database), and over 50 records for ME (ME-BRC website; P.D. Vickery pers. comm.).

Early report to 1950. The first state record was 1 at New Hampton 28 Oct 1945 (V.H. Hebert).

1950 to present. Significant increase in reports, especially after 1980.

Spring. Ten reports, 27 March to 17 June. Single birds were at Laconia 27 Mar to 6 Apr 1959 (V.H. Hebert *et al.*), an adult male at Lee 2 Apr 1975 (J. Nugent, C.A. Federer), at Epsom 19–27 May 1965 (J. Necoton *et al.*), at East Kingston 27 Mar 1996 (S. Drew), a female at Concord 6–7 Jun 1982 (H.B. Miller), an adult male at North Hampton 17 Jun 1989 (H. Bauer; photo), at Salem 20 Apr 1990 (D. Morotte), at Errol 1 Jun 1990 (S.B. Turner), at East Kingston 4 Jun 2001 (R. and J. Marston *et al.*), and at Danville 9 Apr 2011 (A. Pelczar).

Summer. Six reports, mid-July through August of single birds including at Alexandria mid-Jul 1983 (C. Crawford), at Hampton 6–8 Aug 1984 (G. Williams; photo), a female at Star Island 16 Aug 1958 (K.C. Elkins *et al.*), at

Londonderry 16–17 Aug 1973 (D. MacRae; photo), at Merrimack 2 Aug 2003 (L. Dolley), and at Conway 18 Aug 1994 (N. Stedman).

Fall. Nine reports, mostly of single birds including 1 at Laconia 2–6 Sep 1968 (H.C. Anderson, R.W. Smart; photo), 1 at Star Island 4 Sep 2008 (J. Flicker, A. Pike *et al.*), adult male at Exeter 9 Sep 1968 (H.T. Kregar), 1 at Wakefield 25 Sep 1997 (K. Connell), 1 at Milford 22 Sep 1999 (D. Strong, E. Abrams), 1 female at Rye 14 Oct 1972 (E.W. Phinney), 2 males at Dublin 25 Oct 1964 (E. Allison *et al.*), 1 at Greenland 25 Oct 2005 (S.R. Mirick), and 1 at Greenland 30 Oct 2009 (L. Kras).

Winter. Four reports: 1 at Hillsborough 1 Dec 2005 (I.C. MacLeod), 1 at Stratham 4 Dec 2005 to 4 Jan 2006 (S.R. Mirick, D.B. Donsker *et mult.*), 1 at East Kingston 21–26 Jan 2007 (E.A. Masterson, P. Brown *et al.*), and 1 at Stratham 21–27 Jan 2007 (S.R. Mirick, D.J. Abbott *et al.*).

Rusty Blackbird *Euphagus carolinus*

Status. Increasingly uncommon spring and fall transient, greatly declined as a breeder since the early 1960s. A species of Special Concern in New Hampshire.

Early reports to 1950. Not recorded by Belknap (1792); first known state record is a male collected at Hollis 8 Apr 1875 by J. Dwight (AMNH #386662). Allen (1903) called it a “common spring and fall migrant; rare summer resident in the north;” his extreme migration dates were 8 March to 19 April in spring and 9 September to 2 October in fall. Marble (1907) considered it uncommon in late September at Crawford Notch. Thayer (1912) considered it uncommon in Dublin and said it did not nest there. Wright (1911) called it only a fall migrant in late September and early October at Jefferson where it often appeared in flocks of up to 60–80 birds; he noted a flock of 200 at Lancaster 5 Oct 1904. At Hanover, Lord’s (1918) early spring date northbound 1912–1917 was 27 March and average arrival was 4 April. In the Lake Umbagog region, Brewster (1937) in 1871–1909 thought it a “not uncommon summer resident” between extreme dates of “15(?) April and 27 Oct (1885);” he often saw “hundreds” gathering on mud flats near the outlet of the lake during the first half of October.

Kennard (1920) reports it nesting in Coos County in 1915 and 1916, but it was not known to breed in the White Mountains at that time. “W. Taber (unpubl. data) apparently was the first to record the Rusty Blackbird in the White Mountains during the breeding season at Lost River, Kinsman Notch, Woodstock 17 June 1934. Taber also found 3 at Flat Mountain Pond, Sandwich 23 July 1939. In the meantime, observers found 15 birds at Long Pond, Benton on 1 July 1938...Since then, Rusty Blackbirds have occurred in summer at 30 or more White Mountain locations, including Lonesome Lake, Lincoln;

the Cherry Ponds, Jefferson; Lily Pond and Greeley ponds, Waterville Valley; Hermit Lake, Sargents Purchase; and Lost Pond, Pinkhams Grant” (T. Richards *in* Foss 1994).

In the Merrimack River valley, Dearborn (1898) found it a “plentiful” migrant in Belknap and Merrimack Counties, occurring in flocks. Johnson (1892) collected a bird 8 Mar 1892 that had wintered in “central New Hampshire” due to loss of primaries on 1 wing but provided no specific locality. Dearborn (1905) considered it a regular spring and fall migrant in Northfield. Goodhue (1922) called it an “early spring and late fall migrant south of the White Mountains [at Webster]; to the north a rather rare summer resident.” White (1924) thought it an irregular but annual migrant at Concord in both dates and numbers; his extreme dates were 18 April to 13 May in spring and 26 September to 10 November in fall. McGowan (1927) reports 1 wintering at Manchester 1926–1927, and Foster (1936) records 2 wintering there about 1930. White (1937) revised his 1924 opinion at Concord to “common” in fall; his extreme dates changed to 25 Mar 1929 to 13 May 1920 in spring and 21 Sep 1925 to 10 Nov 1920 in fall.

In the coastal region, Dearborn (1903) called it an “abundant” and regular migrant in spring and fall, his extreme dates there being 13 March to 2 May in spring and 29 September to 16 October in fall. Allan (1931) reports 1 at the Isles of Shoals 28 Apr 1930, and Wright (1937) mentions 1 collected at Appledore Island, ME, 5 Oct 1935. Reports submitted to RNEB in 1937–1949 show usual spring arrival in the last week of March and the first week of April, earliest arrival being 6 at Hanover 15 Mar 1945 (L. Forsyth, W.G. Goodhue) and high count of 700 at Hanover 8 Apr 1943 (L. Forsyth, W.E. Lanyon). In fall, southbound migrants appeared south of the White Mountains as early as 1 at Hanover 19 Sep 1943 (F. West *et al.*), latest being 6 at Winchester 20 Nov 1948 (S.K. Harris); an exceptional summer record probably of early migrants is 100 at Enfield 17 Aug 1943 (W.E. Lanyon).

1950 to present. Noticeable decline as both a migrant and breeder. Breeding population listed as declining by Hunt (2009b).

Spring. Earliest known spring arrivals of birds not thought to have wintered are 1 on 1 Mar at Kensington in 1999 (G.W. Gavutis, Jr.) and at South Hampton in 2009 (L. Medlock); mean first arrival since the 1960s is 22 March, though spring arrival can vary widely and the first migrants are sometimes not reported until the first week of April. Peak migration period is usually the last week of March and the first 2 weeks of April; peak count in this period is about 300 at the coast 6 Apr 1975 (L.G. Phinney *et al.*), counts over 30 being unusual in recent years. A rare spring migrant at Star Island; single birds were found there 8 May 1966 and 14 May 1967 (both

ASNH field trips), and 3 at White and Seavey Islands exceptionally late on 4 Jun 2002 (D. Hayward *et al.*).

Summer and breeding. Earliest known arrival in Coos County where it still breeds is 2 at Pittsburg 31 Mar 1968 (R.C. Hebert *et al.*), though in late seasons arrival there may be a week or more later. Peak known population in Pittsburg was 85 pairs in summer of 1961 (V.H. Hebert *et al.*). “On 16 June 1953, Richards saw a Rusty Blackbird nest with 4 recently hatched young at Lake Solitude on Mt. Sunapee, Newbury [at 2400 feet]... This apparently established the first New Hampshire breeding record south of the White Mountains. Observers found Rusties there in the next 3 summers but none thereafter. Richards also observed families at a beaver pond in Dublin on 19 July 1962 and 21 and 30 June 1963” (T. Richards *in* Foss 1994). Up until the 1970s a pair or 2 bred at Nancy Pond at about 3100 feet, the elevation record (R.S. Ridgely pers. comm.). Cohn-Haft (1995) said it was formerly common at the Second College Grant but had become uncommon to rare. Long-term New Hampshire BBS population trend data show a very sharp decline averaging about 9.5% per year in 1966–2009 and 1999–2009 (Appendix IV).

In the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or considered probable in only 15 priority atlas blocks clustered in the northeast part of Coos County and the eastern part of the White Mountain region; the only sites south of the White Mountains were near Orford and North Sandwich (Foss 1994). In 1997, it was found at Jefferson and Enfield (P. Newbern, P.D. Hunt). Three territorial males were found in Sandwich Notch 14 Jun 2007 (A.J. Vazzano, R.S. Ridgely), but there were none there in 2009 or 2010 (R.S. Ridgely pers. comm.). As pointed out by Richards (*in* Smith 1979), “In recent years... the species seems to have suffered a substantial decline in numbers as a summer resident,” and he noted (*in* Foss 1994) that “...at the southern extreme of its breeding range, the numbers and distribution of Rusty Blackbirds may fluctuate over time.” The Pittsburg, Sandwich Notch, and Lake Umbagog regions have been the only known continuous breeding localities 1980s–2011. Twenty-nine active territories were found in the northern part of the state in 2011; 17 pairs successfully fledged young and 5 failed (Foss 2012). Breeding habitat in the state has been found from 1000 to 4000 feet elevation; an excellent distribution map is in WAP (2005) where a major decline is also described.

Studies have shown that this species has declined in New England “an estimated 90% over the last 100 years and continues to decline at a significant rate of 13% per year” (Osborne *et al.* 2011). Recent declines are attributed to habitat loss and degradation, logging, drying of wetlands and increases of environmental contaminants including mercury. Studies have shown very high blood concentra-

tions of mercury in this species in northern New Hampshire (Osborne *et al.* 2011, Evers *et al.* 2012).

Fall. Earliest known certain migrant south of the White Mountains is 1 at Hinsdale 26 Aug 1958 (T. Richards). Peak fall migration period is variable but usually occurs between the last week of September and the first 3 weeks of October. Peak counts south of the White Mountains are 300 at Exeter 8 Oct 2009 and 250 still there 15 Oct 2009 (both E.A. Masterson), 300 at the coast 8 Oct 1961 (R.W. Smart, V.H. Hebert), 200+ at Hampton Falls 2 Oct 1980 (G.W. Gavutis, Jr.), and 129 at Windham 10 Oct 2002 (M.G. Harvey), though counts over 20 anywhere in recent years are unusual. Rarely has still been numerous late in the north country: 425 in Coos County 16 Oct 1966 (V.H. Hebert) though not in such numbers since 1990. In most years all are gone by mid-November. Rare at Star Island in fall: 1 on 1 Oct 2000 (R.W. Suomala) and 5 there 26 Oct 1969 (D.J. Abbott *et al.*).

Winter. Occasional at this season. A few sometimes linger into mid- or even late December at feeding stations, even far north: 2 at Pittsburg 28 Dec 1971 (D.W. Finch). Over 15 reports in January and February including some that remained for weeks, including in Coos County: 1 at Jefferson 1 Jan to 17 Feb 1960 (R. Hunt *et al.*), 1 injured bird present all winter at Pittsburg 1962 (F.T. Scott), 1 at Lee 13 Jan to 6 Feb 1965 (O. Earle *et al.*), 2 at Rye 12 Jan at least to 19 Mar 1972 (L.G. Phinney *et al.*), 1 at Errol 21 Dec 1978 to 20 Jan 1979 (D.W. Finch), and 3–10 at Greenland 9 Jan to 27 Feb 2000 (P.D. Hunt *et al.*).

Common Grackle *Quiscalus quiscula*

Status. Common to abundant statewide, more so south of the White Mountains but nonetheless widespread in the north country. It has greatly increased since the mid-1800s.

Early reports to 1950. Included by Belknap (1812) as the “Crow Black Bird, *Gracula quiscula*,” but not collected by J. Dwight at Hollis in the 1870s, nor mentioned by Howe (1901–1903) at Bridgewater. Goodhue (1877a) called it “not common” at Webster. Batchelder and Fogg (1899) called it a rare transient at Manchester. Marble (1907) had only 1 record for Crawford Notch, a single bird there in Jul 1906. Allen (1903) considered it an uncommon and local summer resident of spotty distribution in the state. Spaulding (1909) said that 1 wintered at Manchester 1908–1909, and Thayer (1912) called it rare and irregular at Dublin, not nesting there, though it “formerly” nested at Keene. Wright (1911) called it a “rather uncommon summer resident in Lancaster and an autumn migrant sometimes in large numbers;” he noted an exceptional flock of 500 at Lancaster 2 Sep 1909. Thayer (1914) reported no change in its uncommon status at Keene from 1885 to 1914. Lord (1918) found it regularly at Hanover

1912–1917, his earliest spring date being 6 March and his average arrival there being 30 March. Brewster (1937), somewhat surprisingly in comparison to other contemporary reports, found it a “locally abundant summer resident” at the Lake Umbagog region in 1871–1909, his extreme dates there of “April 15 to Oct 27 (1885);” he found migrant flocks of local birds by mid-August, assuming that flocks later came from the north.

In the Merrimack River valley, Dearborn (1898) thought it a “common summer” resident in Belknap and Merrimack Counties and called it local and uncommon at Northfield (1905). Goodhue (1922) thought it a “rather uncommon local summer resident” at Webster and White (1924b) called it an uncommon summer resident at Concord, his extreme dates being 23 March in spring and 11 October in fall, noting flocks of local birds in July. Later, White (1937) thought it had become more common at Concord, his extreme early spring date then being 13 March, and average arrival from 1920 to 1937 was 24 March.

In the coastal region, Dearborn (1903) found it only locally common, not nesting there. Allan (1931) had only a single report at the Isles of Shoals from an unmentioned island on 10 Nov 1929, but Wright (1937) did not mention it at all. Reports submitted to RNEB in 1936–1949 show a usual pattern of spring arrival in the second and third weeks of March, earliest being 100 at Exeter 6 Mar 1946 (Mrs. N.L. Hatch). The usual fall departure was by the last 2 weeks of October, the latest reported flock being 175 at Stratham 9 Nov 1949 (T. Richards), and only a single report into December, 1 at Winchester 17 Dec 1947 (Ross).

In summary, numbers and distribution of this species appear to have increased from 1900 to 1950; it has steadily arrived earlier and left later, and become much commoner as a breeder.

1950 to present. Continued increase until about 1990, especially as a migrant and north of the White Mountains. Since then, its breeding population is listed as declining by Hunt (2009b).

Spring. Earliest report of a bird thought not to have wintered is 1 at Laconia 15 Feb 1957 (V.H. Hebert), though usual first arrival is not until the last few days of February or early March: 27 at Dover 24 Feb 1997 (S.R. Mirick) and 200 at East Kingston 22 Feb 2002 (D.W. Finch). Mean spring arrival since 1960 is 8 March, and peak migration period is the last 2 weeks of March and the first week of April. Peak count in this period is 60,000 at Portsmouth 21 Mar 1976 (E.W. Phinney) though counts over 5000–10,000 are uncommon and there have been none since 2000. “Hundreds” had already reached Pittsburg by 30 Mar 1962 (F.T. Scott). Late certain migrants are 4 flying north offshore at Jeffreys Ledge 25 Apr 2009 (E.A. Masterson).

Summer and breeding. Now breeds statewide except for the highest elevations in the White Mountains. Had become a “common summer resident” even in northern Coos County at the Second College Grant by the early 1980s (Cohn-Haft 1995). In the *Atlas of Breeding Birds* project 1981–1986 it was confirmed or thought probably breeding in 168 priority atlas blocks statewide with the comment that density of breeding birds was greater from the White Mountains southward than in the north (Foss 1994). Long-term New Hampshire BBS population trend data show a moderate decline averaging about 2.5% per year in 1966–2009 and 1999–2009 (Appendix IV). Summer resident birds begin leaving nesting areas and forming flocks by late July or early August; these flocks are usually in the 40–50 range and grow larger by early September.

Fall. Peak fall migration period is typically the last 2 weeks of October and the first week of November though a migrant has been at Star Island as early as 22 Aug 1979 (J. Ginaven). Peak numbers known in the coastal region are an astonishing 1.0–1.2 million at East Kingston 5 Nov 1977 (D.W. Finch); 343,000 at Portsmouth 3 Nov 2009 (E.A. Masterson); 100,000 at Stratham 29 Oct 2005 (S.M. and J. Mirick); and 100,000 at Durham 7 Nov 2009 (S. Young). These counts are all related to birds entering or leaving massive roost sites. High counts for the Merrimack River valley are 70,000 at Merrimack 23 Oct 1965 (R.W. Lawrence), and a flock of 105,000+ blackbirds at Chester 25 Oct 1994 (L. Noyes) was mostly this species. Other than at the peak of migration, counts above 8000–10,000 are unusual, both at the coast and in the Merrimack River valley. An exception is the Connecticut River valley where fall counts have seldom been much over 1000, the highest known being 2500 at Hinsdale 13 Oct 2007 (C. Seifer, E.A. Masterson). Single birds and small flocks in the 3–8 size range regularly linger into mid- to late December, especially near the coast, and occasionally inland in the lower part of the 2 major river valleys.

Winter. Though the first known winter record dates from 1909, by the late 1950s small numbers began to be regular at the coast and inland at feeding stations, often into mid-January and increasingly wintering successfully through February. These birds are occasionally even as far north as Errol and Pittsburg, making early spring migrants difficult to distinguish.

Brown-headed Cowbird *Molothrus ater*

Status. Common and widespread summer resident, common to abundant on migration, casual in winter.

Early reports to 1950. A bird of the Great Plains that invaded New Hampshire as the forests were cleared. Not reported by Belknap (1792) but was apparently common south of the White Mountains, principally in the south and in the river valleys, as far north as Warren by 1870

in the Connecticut River valley (Samuels 1865, Little 1870, Fox 1876), and Webster in the Merrimack River valley (Goodhue 1877a). J. Dwight collected a male at Hollis 23 Aug 1876 (AMNH #387180), and Faxon and Allen (1888) considered it rare in the Bethlehem and Franconia area, reporting 1 seen at Franconia in Jun 1887 (B. Torrey). Spaulding (1895) mentions 1 collected at Lancaster 18 Jan 1895. Curiously, Allen (1903) and Hoffmann (1904) only described it as a local and uncommon summer resident in the “southern and western part of the state” and in the Connecticut River valley north to Lancaster where Wright (1911) found it a “rare summer resident.” Brewster (1937) only found it once at Lake Umbagog in the entire 1871–1909 period, a single bird just over the border in Upton, ME, 29 May 1876. Thayer (1912) thought it very rare at Dublin, though “not rare at Keene, where it breeds.” Lord (1918) found it regularly at Hanover 1912–1917, his earliest in spring being 29 March and average arrival there on 7 April.

In the Merrimack River valley, Allen (1903) recorded it only north to the Lakes Region, Howe (1901–1903) had none at Bridgewater, and Marble (1907) found none at Crawford Notch. Dearborn (1898) thought it “local” in Belknap and Merrimack Counties though “plentiful” at Tilton and common at Northfield village (1905). It had increased at Concord when White (1924b) called it a “fairly common summer resident; somewhat irregular in distribution and numbers,” though he noted (1937) that it had become scarcer after 1930; his earliest spring arrival date was 19 Mar 1898 and last in fall was 2 Oct 1929.

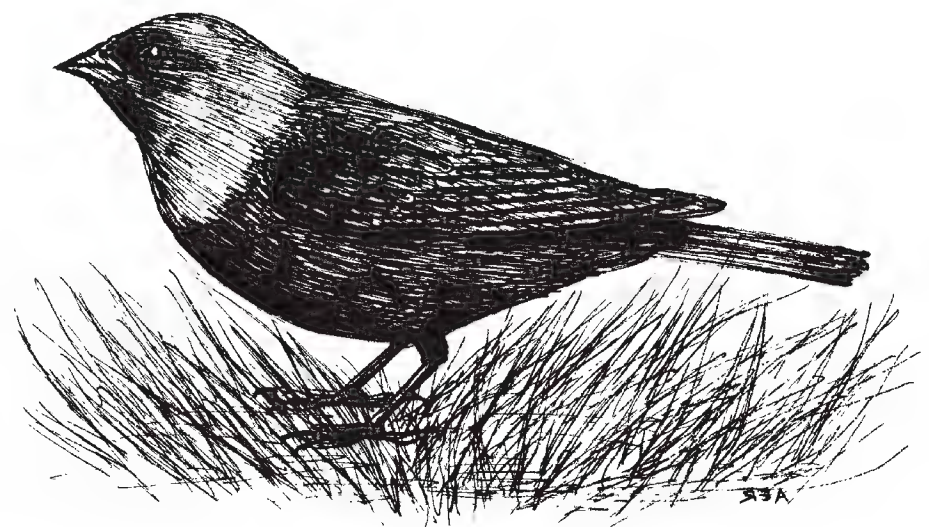
In the coastal region, Dearborn (1903) thought it “local” and not common, arriving in March and leaving in October. Allan (1931) had only 1 record at the Isles of Shoals, 1 on 2 Apr 1930, and Wright (1937a) found 3 on ME islands 26 Jul 1935. Reports submitted to RNEB in 1936–1949 show a general pattern of spring arrival in the last week of March or the first week of April, fall departure between the third week of September and the second week of October, a major flock of 600 at Hanover 17 Apr 1943 (L. Forsyth), 1 report as far north as Whitefield as late as 16–17 Dec 1941 (D.J. Lennox), 1 at Monroe 20 Dec 1948 to 6 Jan 1949 (I.F. Hunt *et al.*), and 2 wintering at Kingston 27 Feb 1948 (L. Barrett).

In summary, despite inconsistencies in the description of its status from the late 1800s to the 1920s and while confined primarily to southern New Hampshire from about 1850 to 1900, it appears to have spread more widely and its numbers increased significantly by 1949; it also began to occur more frequently into winter.

1950 to present. Further increase until the 1960s, after which numbers declined noticeably into the 2000s and 2010s. Breeding population listed as declining by Hunt (2009b).

Spring. Earliest arrivals are a flock of 17 at Walpole 5 Feb 1955 (D.W. Brainard) and 1 bird at Concord 11 Feb 1956 (D. Webb) when none were known to winter. Usual arrival is the last week of February, and peak migration period is the last week of March to the third week of April. Peak counts are 1000 at Charlestown 31 Mar 1966 and 7 Apr 1969 (W.W. Kidder *et al.*), though more usual high counts are in the 75–100 range, especially since the 1970s, an exception being 425 counted migrating north at Seabrook 13 Apr 2008 (S.R. and J. Mirick). Often reaches Coos County by early April: 87 there on 2 Apr 1967 (V.H. Hebert *et al.*). A late migrant at White and Seavey Islands 18 Jun 1998 (J. Ellis, D. Hayward) and 1 there 13 Jun 1999 (D. Hayward, J.J. Kanter).

Summer and breeding. Now well distributed all over the state. Ridgely (1977) called it a “widespread common



breeder, and common to very common migrant” and common resident up to 1500 feet elevation in the Squam Lake area, but since it has declined and is now uncommon in that area (R.S. Ridgely pers. comm.). Allison and Allison (1979) considered it a “common summer resident. Often abundant on migration” at Dublin. At the Second College Grant, it was called “common” by Cohn-Haft (1995). The *Atlas of Breeding Birds* project in 1981–1986 found it in 123 priority atlas blocks widely distributed over the state at which breeding was confirmed or considered probable (Foss 1994), the only places where it was not found being the highest elevations of the White Mountains and the very northernmost part of Coos County. Long-term New Hampshire BBS population trend data show it to have declined at a rate of about 3.1% per year in 1966–2009 and 1999–2009 (Appendix IV).

Fall. Birds begin to leave breeding areas by mid-July and form flocks. Possible southbound birds or birds raised on the Isles of Shoals, almost entirely juveniles at White and Seavey Islands, were 2 on 3 Jul 1998, 3 on 8 Jul 1998, and 10 on 22 Jul 1998 (all by J. Ellis, R.A. Quinn, D. Hayward). By September, flocks including young of the year in the

50–100 range are routine in many places. Peak migration period is the third week of September through the third week of October. High counts in this period are 2500 at Charlestown 20 Oct 1975 (W.W. Kidder) and 2600 at Nashua 12 Oct 1965 (R.W. Lawrence), though counts over 1000 have become scarce since the late 1960s. In mild seasons flocks of 250–400 or more were formerly found as late as mid-November or later; 500 at Durham 12 Nov 1973 (C.A. Federer) and 600 at Portsmouth 17 Dec 1966 (L.G. Phinney *et al.*). Today, single birds and even small flocks in the 15–20 range regularly linger at the coast and even north of the White Mountains in the Connecticut River valley into early or mid-December: 17 at Pittsburg 12 Dec 1965 (V.H. Hebert *et al.*). One was at Star Island 18 Aug 1981 (J. Ginaven), at White and Seavey Islands 29 Sep 1998 (M. Suomala), and an unusual flock of 40 was over the ocean off Star Island and 2 were over Jeffreys Ledge 22 Oct 1977 (both D.W. Finch).

Winter. In the early 1960s to the 1980s it occurred in January and February regularly at the coast, less often in the Lakes Region, and in both interior river valleys: sometimes flocks occurred into February such as 50+ as far north as Woodsville in early Feb 1974 (P.A. Phipps) and 60 at Boscawen 6 Feb 1975 (K.C. Elkins). But it has been much scarcer since the 1980s: only 2 on the Concord CBC since 1993 (R.A. Quinn). Unusual recent winter flocks have been 300 at East Kingston 6 Jan 2005 and 70 there 10 Feb 2005 (both D.W. Finch). Flocks in late February could be early spring migrants.

Orchard Oriole *Icterus spurius*

Status. Very uncommon summer resident, perhaps subject to periodic advances and withdrawals from the northern boundary of its range.

Early reports to 1950. First report for the state was a bird at Concord 24 and 31 May 1903 (Abbott 1906). Next report was 1 at Rollinsford (Allen 1909) for which no date is provided. Goodhue (1922) observed 1 at Webster on 14–15 May 1922 and collected it there 16 May. L. O. Shelley reported an adult male singing at East Westmoreland 27 May 1925 (Bagg and Eliot 1937). McGowan (1927) reported a pair breeding at Manchester in 1925, 1 at Troy in the spring of 1926 (P. Lowe), and 1 at Manchester 10 Apr 1926. Weaver (1942b) reported 1 at Hanover 15–23 May 1941 (R. DeCou *et al.*), only the third known report for the Connecticut River valley after the 1925 and 1926 reports.

1950 to present. Possibly absent from 1941 to the next known report in 1963; occurred almost annually 1963–1995 and annually since but only in the coastal region and the Merrimack River valley. Population trend listed as increasing by Hunt (2012).

Spring. Earliest known arrival is 1 at Rochester 27 Apr 2006 (D. Hubbard). Most birds remain only a few days and appear for the first time in the middle 2 weeks of May. Peak known single-locality counts are 5 at Stratham 15 May 2000 and 10 at Dover 11 May 2004 (both G.W. Gavutis, Jr.). Extreme dates for Star Island include a total of at least 10 individuals between 1 on 5 May 1973 (B. Read *et al.*) and 1 on 2 Jun 1999 (R.W. Suomala *et al.*), most reports there in mid-May. Most other spring records are from the coastal region or the Merrimack River valley north to Ellsworth on 17 May 1972 (J. Lanier), at North Sandwich 18 May 2011 (R.S. Ridgely), and at Sandwich 1 Jun 1997 (A.J. Vazzano, S. Wiley). Northernmost report from the Connecticut River valley is 1 at Lyman 18 May 1989 (M. Turner). It has increased since 2000: 11 birds reported 1 Jun to 1 Jul 2002 (v.o.) and 27 reported 2 May to 21 Jun 2004 (v.o.). Latest known spring record for a bird thought not to be on territory is 1 at Holderness 21 Jun 1990 (J. Withgott).

Summer and breeding. Birds are known to have bred by the observation of a nest or young in Hollis (1966, 1967, 1977), New Hampton (1968), Dover (2003), Stratham (2002), and Kensington (2000, 2001). Five birds (including a nest) were at Horseshoe Pond in Concord 15–22 May 2009 (R.A. Woodward). In the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or considered probable in 5 priority atlas blocks (Foss 1994) including Rye (1985), Newmarket (1985), and Amherst (3 years). Few reports after mid-July. A long-distance migrant, breeding birds leave early; peak migration period is late July through the first week of August: 2 at Rochester 31 Jul 2006 (D. Hubbard), 2 at Kensington 3 Aug 2001 (G.W. Gavutis, Jr.), and 1 at White and Seavey Islands 11 Aug 2002 (J.J. Kanter *et al.*). Late reports are 1 banded at Star Island 22 Aug 2000 (R.W. Suomala), and 2 seen at New Hampton 30 Aug 1978 (V.H. Hebert).

Fall. The only known report is 1 banded at Star Island 21 Sep 2000 (R.W. Suomala, D. Hayward).

Bullock's Oriole *Icterus bullockii*

Status. Irregular visitor from the west, usually appearing from late summer into winter and early spring. Two accepted records in VT in 1987 and 1996 (C.C. Rimmer pers. comm.); at least 20 records for MA (Veit and Petersen 1993, BO database 2010), and over 6 records for ME (ME-BRC website, P.D. Vickery pers. comm.).

1950 to present. Thirteen records, mostly in the Merrimack River valley and in the coastal region. The first state record was a female at Laconia from “late” Oct 1952 to 29 Apr 1953 (Mrs. J. Conway, V.H. Hebert *et mult.*); thought possibly to be a hybrid with Baltimore Oriole by Hebert (1953). Since 1960, earliest arrival in fall was a young male with a large white wing patch at Rye 22 Aug

1965 (R.W. Smart, V.H. Hebert). Two records at Star Island: a female 14 and 25 Sep 1966 (R.W. Lawrence, R.W. Smart *et al.*) and an adult female there 6 Oct 1968 (R.W. Smart *et al.*). One at Penacook 6–25 Nov 1962 (Pirie *et al.*); 1 at Portsmouth 16 Nov to 24 Dec 1965 (L.G. and E.W. Phinney, D.W. Finch); 1 at Portsmouth 20 Nov 1966 (L.G. Phinney); 1 at Manchester 15–30 Nov 1981 (M.T. Martin); 1 at Portsmouth 2 Dec 1976 (E.W. Phinney *et al.*); 1 at Manchester 28 Nov 1985 to 6 Jan 1986 (R.A. Quinn, M.T. Martin *et al.*); 1 at Concord 23 Nov 1966 to 5 Jan 1967 (H.B. Miller *et al.*); 1 at Dover 13–14 Jan 2002 (S.R. Mirick, D.J. Abbott *et al.*); 1 at East Kingston 15 Apr 1976 (D.W. Finch); and the latest known in spring, an adult male at Pembroke 5 May 1996 (W. and K. Goodwill).

Taxonomic note. See Appendix for report of a presumed hybrid between this species and Baltimore Oriole. This species was considered separate from Baltimore Oriole by the AOU in 1957 (AOU 1957), the 2 species were lumped as “Northern Oriole” in the 1983 Checklist (AOU 1983) and then split again in the 1998 Checklist (AOU 1998). While it is possible that some reports of birds seen in the 1983–1998 period properly belong here, the published record does not provide the necessary data to ascertain this.

Baltimore Oriole *Icterus galbula*

Status. Common migrant, summer resident, and breeder statewide except for the higher elevations in the White Mountains and in much of northern Coos County.

Early reports to 1950. Mentioned by Belknap (1812) both as the “Hang Bird, *Oriolus icterus*,” and as “Golden Robin, *Oriolus baltimore?*” The first specific state record is 1 collected by J. Dwight at Hollis 8 Jun 1876 (AMNH #386484). Morrison (1883) mentioned its presence at Windham, and Thurber (1884) said it had used the same nest site at Nashua from 1878 to 1883. Allen (1903) considered it a common summer resident in the southern river valleys, “becoming rare in the White Mountain region.” Thayer (1912) called it “rather rare” at Dublin but common at the lower elevation of Keene; he (1914) also noted no decline in numbers at Keene from 1885 to 1914. Wright (1911) considered it an uncommon summer resident at Jefferson, nesting seldom. Lord (1918) listed his earliest in spring as 5 May and five-year average arrival date was 11 May at Hanover. Brewster (1937) found it only once in New Hampshire during the entire 1871–1909 period, 1 in Cambridge 21 Jun 1879.

In the Merrimack River valley, Dearborn (1898) found it “common in all quarters” in Belknap and Merrimack Counties. In 1905, he considered it common at Northfield. At Concord, White (1924b) called it a fairly common summer resident with an average spring arrival date of 11

May at Webster. Later, White (1937) called it a common summer resident, his latest in fall being 31 Aug 1927.

Dearborn (1903) considered it common at Durham, extreme dates from 6 May to 6 September. Allan (1931) found it at the Isles of Shoals 12 May 1930 and 12 Sep 1930, the specific state not given. Reports submitted to RNEB in 1937–1949 indicate usual spring arrival in the first 2 weeks of May, earliest being 2 May 1942 and 1944, both at Hanover (R.L. Weaver), and latest in fall being 17 Sep 1939 at Ossipee (E.E. Pratt).

In summary, while this species may have been largely confined to the southern portions of the major river valleys and the coastal region in precolonial times, deforestation in the 1800s and the planting of elms in villages probably allowed it to spread widely in the state, especially in the 2 major river valleys. Several writers (Dearborn 1903, Wright 1911, White 1924b) comment on the close association of this species with elms along village streets.

1950 to present. Though still common and widespread, probably a little less so than in the 1900–1950 period as reforestation has occurred and many elms have disappeared. Breeding population listed as declining in hardwoods and mixed forest since 1990 (Hunt 2009b).

Spring. Earliest known spring arrival of a migrant is 16 Apr 1969 at Stratham, 1 seen migrating in a flock of blackbirds (R.M. Gamester), the next earliest being 1 at Laconia 18 Apr 2002 (H.C. Anderson). Mean first arrival date is 2 May, and peak migration period is the middle 2 weeks of May. Two high counts in this period include a remarkable 75 in the coastal region 14 May 1961 (R.W. Smart, V.H. Hebert). More than 100 were found in a major statewide fallout 11–18 May 1996 (R.A. Quinn *et mult*). There are few other counts over 25. General spring arrival appears to be at least a week earlier than it was in the 1930s. Latest spring migrants cannot be differentiated from summer residents on the mainland. Extreme spring dates for migrants at the Isles of Shoals are 1 at White and Seavey Islands 4 May 2002 (D. Hayward *et al.*) to 1 there 20 Jun 1998 (J. Ellis, D. Hayward).

Summer and breeding. Common and widespread breeder virtually statewide except for the higher elevations of the White Mountains and the northern half of Coos County. Ridgely (1977) found it common in the Squam Lake region and Allison and Allison (1979) thought it common around Dublin. In the *Atlas of Breeding Birds* project 1981–1986, breeding was confirmed or thought probable in 135 priority atlas blocks located fairly uniformly all over the state (Foss 1994). By the early 1960s, birds began to be found in breeding season with some regularity at Pittsburg, Colebrook, and Columbia in the north country, well north of any site known before 1950. So far, however, it has not been proved to breed at the Second College Grant (Cohn-Haft 1983). Long-term

New Hampshire BBS population trend data show it to have declined an average of about 1.2% per year in 1966–2009 and 1999–2009 (Appendix IV).

Fall. Birds begin to leave nesting territories by early August. Peak fall migration period is typically the last 2 weeks of August, peak counts being 20 at Kensington 29 Aug 2004 and 15 there 21 Aug 2001 (both G.W. Gavutis, Jr.). Most birds are gone by late September but individual birds regularly linger through October into November, less often into mid-December, frequently at feeding stations. Latest known record north of the White Mountains is 1 at Littleton 11 Nov 1966 (R.J. Bradley). Extreme fall dates for Star Island are 18 Aug 1981 (J. Ginaven) to 31 Oct 1970 (D.W. Finch); peak count there was 7 on 29 Sep 2002 (M. Suomala *et al.*).

Winter. Single birds have lingered into mid-January on several occasions, rarely into February, the latest known being 1 at Center Harbor on 26–27 Feb 1972 (J.P. Merrill). Birds have survived through the winter at Manchester (1974), Derry (1972), and Wolfeboro (1960). One was at Groveton from Dec 2003 to 13 Jan 2004 (R. MacIlvane). A bird at Fitzwilliam 22 Mar 2007 (C. Rocheleau) and 1 at Hillsborough 2 Apr 1980 (D. Bennette) probably survived from the previous fall rather than being extraordinarily early spring migrants.

Taxonomic note. See Appendix for report of a presumed hybrid between this species and Bullock's Oriole.

FAMILY FRINGILLIDAE

Common Chaffinch *Fringilla coelebs*

Status. Vagrant from western Eurasia. One record. An adult male at Orford 7 May 1989 (B.K. and M.H. Butler; photo). Three records from MA in 1961, 1988, and 2009 (Veit and Petersen 1993, BO database 2010), and 1 from ME in 1980 (P.D. Vickery pers. comm.).

Brambling *Fringilla montifringilla*

Status. Vagrant from Eurasia. One record. Considered hypothetical for lack of 3 observers. One at Plymouth 23 Oct 1987 (C. Thun; sketch provided). Three records from MA in 1961, 1961–1962, and 1979 (Veit and Petersen 1993).

Pine Grosbeak *Pinicola enucleator*

Status. Regular winter visitor, usually in small to modest numbers, but occasionally common to very common in irruption years. Breeding was documented historically but not for over 130 years.

Early reports to 1950. The earliest known report of this species for New Hampshire is that of J. E. Cabot (1857)

who observed some in the White Mountains in summer, presumably around the time of writing. The next report is that of Thoreau (1910) who observed a pair on Mt. Lafayette, Franconia, 15 Jul 1858. Brewster's first records at Lake Umbagog were "juvenals in first plumage" he collected in late Aug and early Sep 1874, though he did not specify in which state (Griscom 1938). Dwight collected a female in Hollis in Nov 1874 (AMNH #366236). Brewster's and Dwight's birds may have foreshadowed the huge winter incursion of 1874–1875 which brought large numbers to southern ME (Palmer 1949) and to MA (Griscom and Snyder 1955) as well as to New Hampshire (Dearborn 1898). In Feb and Mar 1876, Dwight collected 6 more specimens at Hollis: AMNH #366232, #366233, and #366237 on 19 Feb 1876; #366238 on 6 Mar 1876; and #366234 and #366235 on 15 Mar 1876.

Most writers from 1880–1910 considered it to be a regular winter visitor in highly variable numbers, sometimes appearing in large numbers and remaining from late October or November to March, occasionally to April and rarely to May. Allen (1903) considered it a "permanent resident, breeding in small numbers" in Coos County and the White Mountains. He cited Chadbourne (1887), who saw single birds on Mt. Washington 12 Jul 1884 and 13 Jul 1886, Torrey (1890) who found 3 at Franconia 19 Jun 1889 and 28 Jun 1889; Allen saw 1 himself 14 Jun 1902 at Carter Notch. All of these latter reports were of birds singing and possibly on territories. Stearns (1887) and Allen (1903) also report young seen (H.A. Purdy) being fed by adults at the Connecticut Lakes in late Jul 1876, the most recent unequivocal breeding record, and pairs seen there 24 May 1883 (Anonymous 1883b). There was another huge irruption in the winter of 1892–1893 which was also recorded in ME (Palmer 1949) and MA (Brewster 1895).

The next big flight was in the winter of 1895–1896 (Knight 1897, Dearborn 1898), but there was not another major incursion until the winter of 1918–1919 (Goodhue 1922, White 1924). However, small numbers of birds were present virtually every winter in between irruptions. Batchelder and Fogg (1900) called it "abundant" at Manchester in the 1899–1900 winter. The first known records for the Isles of Shoals were on 10 Nov 1929 and 31 Mar 1930 (Allan 1931), the specific island not stated. The next big incursion was in the winter of 1930–1931, a flight that reached New Hampshire and MA (Griscom and Snyder 1955) but was not noticeable in ME (Palmer 1949). Reports were submitted to RNEB for every year in the 1937–1949 period except 1945, usually in numbers ranging from 1 to 25, except from Dec 1939 to late Jan 1940 when numbers in the 80–125 range were found. In Oct 1949 a major irruption began which culminated in 3000 birds at Hanover 10–12 Jan 1950 (T. Richards, D. Wade); the last birds of this flight were at New Hampton 3 Apr 1950 (V.H. Hebert).

1950 to present. Continues to be a regular winter visitor in variable numbers. In irruption years it usually arrives much earlier in fall than in non-irruption years and also tends to stay later in the following spring. In irruption years it is often found widely south of the White Mountains. Otherwise may be spottily distributed in the south in non-flight years.

Fall. A few birds may appear in the first 2 weeks of September or rarely even earlier: 10 at Franconia 20–27 Aug 1960 (H.C. McDade, R.P. Fox). However, the first birds noted seldom appear before the last week of October, even north of or in the White Mountains. In some years the first to arrive are not found until mid-November or even early December.

Winter. Some usually appear at this season in flocks ranging from 1–20; some seasons they remain north of the White Mountains and other years they are widespread around the state. The New Hampshire Audubon Annual Backyard Winter Bird Survey has shown that higher numbers have occurred semiannually in even-numbered years than in odd-numbered years since 1994. Since 1950 there have been 6 major winter flights: 1961–1962, 1977–1978, 1993–1994, 1997–1998, 2001–2002, and 2007–2008. In the first 2 cases significant numbers also reached south into MA (Veit and Petersen 1993). Though there were higher than average numbers recorded in early 1960 with a peak of 175 at 1 site, the first of the 1961 fall flight appeared 8 Oct 1961 at Dublin (R.A. Sanford) and a total of about 750 birds were seen the following winter with a high count of over 100 in December as far south as the coastal region. The latest record in the south for that incursion was 1 at Dublin 21 Apr 1961 (T. Richards). The 1977–1978 flight began 23 Oct 1977 with 3 at Sandwich (B.S. Ridgely); over 1000 birds were reported during the season, and the flight ended 24 Apr 1978 at Hancock (H.M. Cadot).

A major flight in 1993–1994 began at Landaff 30 Oct 1993 (J.C. McIlwaine), peaked around year-end with nearly 700 seen on CBCs statewide, and the last bird was seen 17 Mar 1994 at Peterborough (F. VonMertens). A significant flight began at Tamworth 3 Nov 1997 (J. Tewksbury), 446 were found on statewide CBCs of which 251 were at Laconia/New Hampton 27 Dec 1997, and the last 2 were at Alstead 15 Mar 1998 (R. and J. Allard). The first of the 2001–2002 incursion appeared at Jefferson 31 Oct 2001 (G.W. Gavutis, Jr.), and numbers built steadily to a statewide total of 856 on the CBCs of which 312 were at Hanover. Birds remained widespread and numerous through Feb, and the last were 2 at Columbia 3 Apr 2002 (D. Killam). The 2007–2008 flight began 2 Nov at Peterborough (L. Tanino) and spread statewide by mid-Dec; 1659 were found on the statewide CBCs and 108 reports were submitted to NHBR, the last of which was 1 at Barnstead 13 Apr 2008 (N. Gary).

Spring. Typical departure in non-flight years is early to mid-April, though in many years it has been by late March and has been as late as 1 at Portsmouth 1 May 1968 (L.G. Phinney *et al.*).

Summer. Five reports in this season: 1 at Mt. Lafayette, Franconia, 2 Jun 1963 (H.C. McDade, R.J. Bradley); 3 at Pittsburg 10 Jun 1962 following the big incursion earlier that year (F.T. Scott); a singing male in the Pemigewasset Wilderness 18 and 19 Jul 1958 (H.C. McDade *et al.*); 1 at Jefferson 9 Jul 1994 (P.D. Hunt); and a pair at Pittsburg 8 Jul 1979 (T. and B.D. Richards). No proof of breeding since 1876.

Purple Finch *Haemorhous purpureus*

Status. Common and widespread breeder, migrant, and winter resident. The state bird of New Hampshire.

Early reports to 1950. Brewster found it in New Hampshire at Lake Umbagog in the early 1870s where he described it as “abundant” in summer; his extreme dates were 10 May (1894) to 13 Nov (1904) and only once in winter in Feb 1886 (Griscom 1938). Next specific dates are the specimens taken at Hollis Jul 1875 (AMNH #365553) and 4 May 1876 (AMNH #365551) by J. Dwight. There was a notable incursion of hundreds, if not thousands, of birds in the winter of 1883–1884 that was also documented in ME (Palmer 1949) and MA (Veit and Petersen 1993). Writers from the 1890s to the 1930s uniformly described it all over the state as a regular spring migrant from late March to early April, a common summer resident, a regular fall migrant from late September into early November, and erratic and occasional in winter: Goodhue (1877a, 1922), Dearborn (1898, 1903, 1905), Howe (1901–1903), Allen (1903), Marble (1907), Wright (1911), Thayer (1912), White (1924b, 1937), and Lord (1918).

There were 3 additional large winter incursions before 1950. Two hundred fifty-six were banded at Peterborough in the winter of 1927–1928 (Whittle 1928c, 1929b); 2 birds banded that season at Peterborough were re-trapped at Stevenson, Alabama, and Thornton, Texas, and a northbound bird banded at Mt. Holyoke, MA, 26 Apr 1928 was recaptured at Peterborough 10 May 1928 (Bagg and Eliot 1937). In mid-Feb of the 1938–1939 winter another major flight began with several thousand present at Hanover by 1 Mar 1939; 1000–1500 still there on 23 Mar, 500+ there 8 Apr, and many were banded (R.L. Weaver); this flight also extended to ME and MA. The late winter of the 1941–1942 season saw a moderate flight with the peak of 160 presumably northbound birds at Hanover 7–10 May 1942 (R.L. Weaver *et al.*).

1950 to present. Moderate decline, especially since 1990 (Hunt 2009b).

Fall. Though numbers of postbreeding birds are often

found moving in localities away from breeding areas by mid-August, usual southbound migration is typically from late September to early November, with a peak in mid-October. However, there are many examples of major migration occurring both before and after mid-October. Both numbers and distribution of movements can vary widely from year to year. In years when birds leave the north country early, arrival in the south and the coastal region in numbers from 25–75 can occur by mid-October. At Star Island, this species was recorded daily from 16 Aug to 1 Sep 1999 (R.W. Suomala *et al.*); in 1969 there were 15 at Star Island 26 Oct (L.G. and E.W. Phinney) and 4 were there 16 Nov (R.W. Smart).

Winter. Birds have been present north of the White Mountains in numbers in the 50–200 range as late as mid-December; or they may be entirely gone from there by the first week of December. CBCs for the Pittsburg, Errol, and Umbagog regions in late December have ranged from 0 to 532+. Winter distribution can vary widely from as many as 300 in the north at Errol 28 Feb 1965 (V.H. Hebert) while few or essentially none were south of the White Mountains at the same time. In some years there can be more birds in the south than in Coos County at this season when food supply is the primary determinant of distribution. “Banding data show that New Hampshire’s summer residents move into New Jersey, Pennsylvania, Maryland and Virginia for the winter and are replaced in our state by birds from further north” (McDermott 1994). A bird banded at Wolfeboro 17 Mar 1954 was shot in Clarksville, Texas, 28 Dec 1955 (R.G. Carpenter II).

In late winter of 1963 there was a major incursion that totaled over 1000 birds statewide: movement was first noted 26 Feb, it was common and widespread by 4 Mar, numbers peaked 7 Mar and decreased rapidly after 19 Mar; 454 were banded at Bedford (J.H. Kennard), and 600+ were present at Nashua 7 Mar (J. Ellis). In 2004–2005 another flight occurred from early Dec to mid-Apr, mostly to south of the Lakes Region; 869 were recorded on statewide CBCs. In some years there is evidence of birds moving north by mid-March: 300 in Coos County 13 Mar 2007 (R. Heil). As pointed out by Hunt (2009a), peak winter numbers 1987–2008 show a fairly distinct four-year cycle with low points 1996, 2000, 2004, and 2008.

Spring. Especially in years where few or none have wintered, northbound migration is found to be under way by the first week of April, frequently peaking by mid-April in the 2 major river valleys and south of the White Mountains. However, as in the fall, timing and distribution of movements can vary widely. High spring count is 750 presumed northbound birds at Hanover 6 Apr 1975 (S. Robinson *et al.*) but nearly all birds were gone from there by 8 Apr 1975. Birds are usually widespread in Coos County by the end of April.

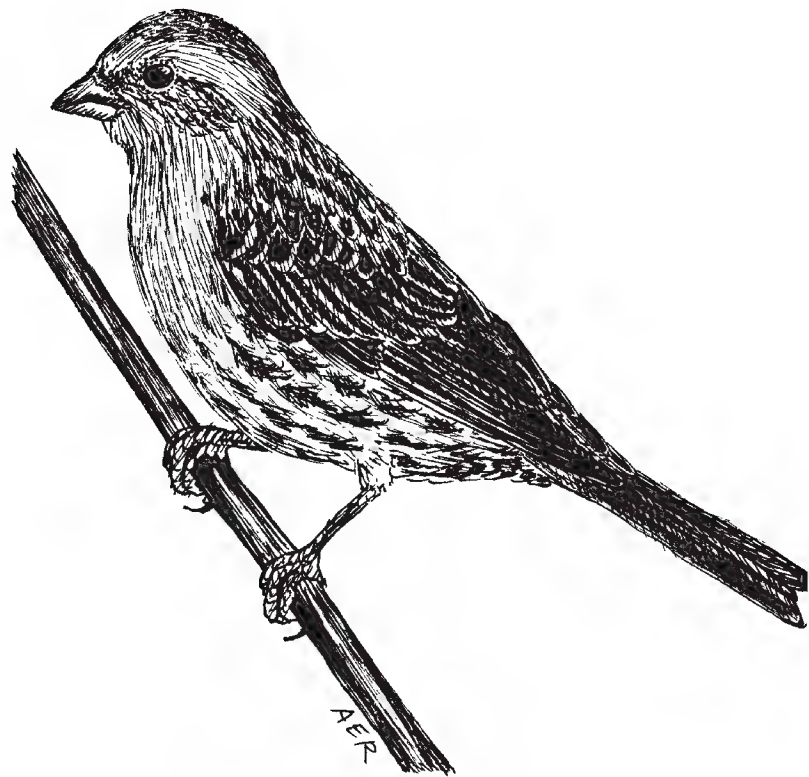
Summer and breeding. This species nests virtually statewide. In the *Atlas of Breeding Birds* project in 1981–1986, breeding was confirmed or deemed probable in 133 priority atlas blocks; the only areas of the state in which it was not found routinely were the urban area around Concord and in the lower Merrimack River valley from Manchester south (Foss 1994). Displacement of this species by House Finches, European Starlings, and House Sparrows from these areas is a possibility but is not yet proved. Highest recorded breeding elevation is regularly at 4000+ feet on Mt. Washington and a pair was seen at 5300 feet in stunted trees there 27 Jun 2010 (R.A. Quinn pers. comm.). Summer breeding populations vary in the same parts of the state from year to year. Unusual post-breeding wanderers were at White and Seavey Islands 7 and 11 Jul 1997 (both A. Cook, M. Schultze). BBS data show that this species declined just over 50% from over 100 individuals per route to about 50 over the 1965–1987 period but was stable from 1987 to 2003 (NHBR 22 [2]: 33). Long-term New Hampshire BBS population trend data show a decline of 3.1% per year for both 1966–2009 and 1999–2009 (Appendix IV), much faster than the regional rate of 1.7% per year 1966–2006 (Sauer *et al.* 2011).

House Finch *Haemorhous mexicanus*

Status. First introduced from the western United States to Long Island, New York, in the early 1940s and successfully nested there in 1943 (Bull 1964). First discovered in MA in 1955 and first known to breed there in 1958 (Veit and Petersen 1993). First New Hampshire record in 1967; now widespread south of the White Mountains. Evidence of a decline in numbers since the 1990s.

1950 to present. First found at Hillsborough 8 Apr 1967 (G.W. Cottrell) and at Concord 14 Apr 1967 (N.B. Struckhoff). Not recorded again until 29 Nov 1969 at Errol (D.W. Finch, S.E. Kress) and a male remained until 31 Dec 1969, at the time the northeasternmost report of the species. One was at New Hampton 13 Dec 1969 (*fide* V.H. Hebert), 1 appeared at North Hampton 15 Feb 1970 (D.J. Abbott *et al.*), and 1 was at Portsmouth 14 Apr 1970 (L.G. and E.W. Phinney). The following winter, birds were found from Dec 1970 to Mar 1971 but not again until the following August. In spring of 1972 it was seen from Mar into mid-May after which it began to be recorded in every season, primarily in the coastal region and in the 2 major river valleys north to the Lakes Region and Charlestown.

Fall. Migratory in the northern part of its breeding range, migrants are often suspected by early September with a peak in early October. Regularly becomes localized at feeding stations in urban and suburban areas by November. Reported on statewide CBCs, first in rapidly increas-



ing numbers followed by a decline after a peak in the late 1990s: totals were 201 in 1981, 623 in 1986, about 1900 in 1990, about 5400 in 1992, 1767 in 1997, 1799 in 2007, 1327 in 2008, and 977 in 2009; this pattern of increase and decline was also observed in MA (Hamilton 2002) due to infection by the mycoplasmal conjunctivitis bacterium *Mycoplasma gallisepticum*. CBC numbers have been highly variable at inland locations such as Concord, ranging from 106 to 387 within the 2006–2010 period (R.A. Quinn pers. comm.).

Winter. Apparently first successfully wintered at feeding stations in the 1974–1975 season at Charleston (W.W. and G.L. Kidder), at Portsmouth (L.G. and E.W. Phinney), and Manchester (H.W. Parker *et al.*). One was as far north as Monroe 1 Jan 2007 (CBC). Now a winter resident in moderate numbers in much of the state south of the White Mountains, though fewer in recent years. Backyard Winter Bird Survey numbers have usually ranged between 900 and 1400 statewide since 1987.

Spring. Numbers reported tend to increase by early April with a peak in mid- to late April, suggesting some increase in local residents due to migration. The first record for Star Island was 1 there 11 May 1975 (K.C. Elkins *et al.*).

Summer and breeding. First confirmed breeding by the observation of young in the summer of 1975 at Manchester (T.E. Harwood) and at Hampton (E.M. McCrillis). In the *Atlas of Breeding Birds* project 1981–1986, it was confirmed or believed probably breeding in 79 priority atlas blocks south of the White Mountains, 1 of which was at Star Island, and in 6 blocks north of the mountains. BBS data show that its population exploded 1980–1994 from almost none to over 220 birds per route but then declined sharply by 1997–2003 to about 100 per route (NHBR 22 [2]: 33). This pattern is reflected in the long-term New

Hampshire BBS population trend data which show an +11.2% per year gain for 1966–2009 but a 5.7% decline per year for 1999–2009 (Appendix IV). Recent data suggest a continued decline 2009–2011 in some areas (R.S. Ridgely pers. comm.). Breeding population trend listed as decreasing by Hunt (2012).

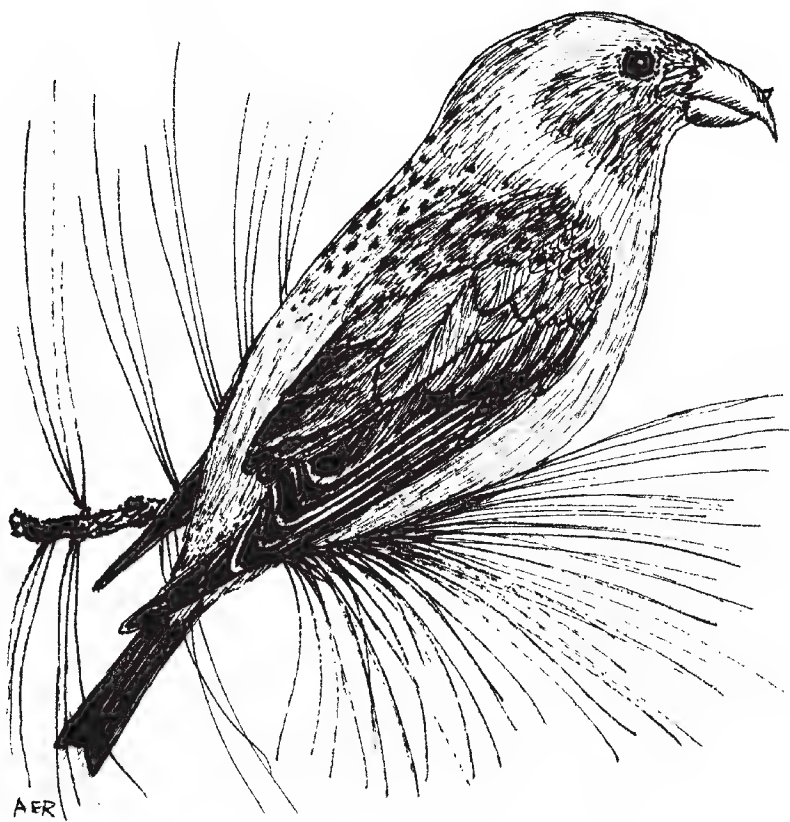
Red Crossbill *Loxia curvirostra*

Status. Highly irregular resident, breeder, and visitor as to season, numbers, and distribution in the state. Incursions appear related to the failure of cone crops far north of the state as well as the presence of good crops in New Hampshire.

Early reports to 1950. The first state report is that of Belknap (1792) who included the “Crossbill, *Loxia curvirostra*?” and a brief description of its habits. Brewster found it next at Lake Umbagog in 1872 and almost every year following until 1907, describing it as an “irregular resident and visitant, sometimes abundant [but] often absent for several years” (Griscom 1938). Brewster was also first to record it breeding there in 1873 and noted the big flight in fall of 1899. Goodhue (1877a) said that “a few breed” at Webster and that it was sometimes common there. Later he (1922) wrote that he saw it commonly at Webster 1875 to 1880 and from that year to 1900; he said it was especially abundant in fall of 1899 into the summer of 1900, but then did not see another 1 there until 10 Dec 1916.

Dearborn (1898) called it “annual” in Belknap and Merrimack Counties, and in Durham he (1903) saw it very irregularly other than in the big flight of fall 1899; he (1905) merely noted it as occurring in Northfield. For Howe (1901–1903) it was an “uncommon visitor” at Bridgewater, and Marble (1907) thought it an irregular though sometimes common visitor at Crawford Notch in summer. Allen (1903) considered it a permanent resident in highly irregular numbers and distribution, sometimes common in conifer forests below 3000 feet elevation; he also noted the great flight of 1899–1900. Wright (1911) reported it irregular in the Jefferson Region but present in the summers of 1903, 1905, 1909, and 1910. Thayer (1912) thought it irregular at Dublin but sometimes common when present. At Concord, White (1924b) only listed 2 reports in contrast to Goodhue’s (1922) described status at nearby Webster. White (1937) records a few more Concord occurrences but still considered it very “infrequent” there.

Reports submitted to RNEB for 1938–1949 report it seen annually in the state and in every month of the year during this period, typically in small flocks from 3 to 15 birds. Records in July and August were all from the White Mountain Region or Coos County. Breeding was documented by a young bird being fed by adults at Hanover 6 May 1948 (L. Forsyth).



1950 to present. Continues to be observed annually but erratically and in somewhat lower numbers than before 1950. Most likely to appear from October to March. Less common as a breeder than in the 1875–1925 period.

Over time, this species shows no consistent seasonal pattern of occurrence or migration. Incursions can be typified by the species becoming more widespread in areas where it had not been seen recently, or it can appear in numbers seemingly all at once. Incursions of the first type occurred from Feb to May 1948 and from Jul 1953 to Jun 1954, numbers typically in the 1–5 range. Slightly larger numbers appeared from Aug 1960 to Apr 1961 and from Sep 1963 to May 1964, flocks reaching 15–20 and occurring at several sites south of the White Mountains including flocks totaling 160 passing through New Hampton 2 Nov 1960 (V.H. Hebert). Still larger numbers occurred from Aug 1969 to May 1970, with flocks in the 10–30 range, but many birds passed through the state southward, leaving only a few wintering birds and none north of the White Mountains. A bigger flight also occurred from Jul 1972 to May 1973 with flocks reported in the 50–100 range. In most years a few are regularly present north of the White Mountains through the summer. Occasional birds are found in the southern part of the state as late as mid-June or rarely into July: 8 at Northfield 8 Jul 2001 (P.D. Hunt) and 40 at Sandwich 25 Jul 2009 (R.S. Ridgely).

Though often suspected after flight years, actual proved breeding has been infrequent. Ridgely (1977) cites nesting at Squam Lake in 1972, and heavily streaked young birds have been noted occasionally in summer, such as 1 at Hancock 26 Aug 1977 (H.M. Cadot) and 2 out of 5 seen at Enfield 23 Jul 1997 (P.D. Hunt), but other documentation is scarce. “Nearly all the Atlas [of Breeding Birds] observations and the only ‘confirmations’ of

[breeding] Red Crossbills were in January and February 1985, and all...[were] from the southern part of the state;” breeding was confirmed or probable in only 7 atlas blocks, the only instances found in the entire 1981–1986 Atlas period (Foss 1994). New Hampshire BBS population trend data show significant declines averaging about 7.1% per year in 1966–2009 and 1999–2009, but these data are not highly credible and should not be considered evidence of actual breeding (Appendix IV).

Taxonomic note. In late winter and early spring of 1941, an incursion of the race *L. c. sitkensis* from its normal range in southern Alaska south to northern California occurred in the northeast in MA (Veit and Petersen 1993; specimens collected). Careful identification of this form with its very tiny bill was reported for 2 birds out of a flock of 15 at Hanover “through the month” of Apr 1941 (R L. Weaver *et al.*), the only known report of this race for the state. This form also invaded southeast to MA in 1887–1888 (Griscom and Snyder 1955), and though it probably occurred in New Hampshire then it was not recorded there. The usual and breeding form in New Hampshire is *L. c. minor* (Griscom 1937). The breeding form from Newfoundland *L. c. pusilla* probably occurs very rarely, as it has in New York (Bull 1974), MA (Veit and Petersen 1993), and ME (Palmer 1949); W. Slocum collected 4 of this form at Errol: 3 on 26 Aug 1883 (MCZ #296005, #296007, and #296009), and 1 on 28 Aug 1883 (MCZ #296006).

Recently, Groth (1993) published a watershed paper on the morphology and call types of about 20 global forms of the Red Crossbill, as many as 10 of which occur in North America. Please also see the excellent paper by Young (2010), which shows conclusively that at least 4 call types have been found in New Hampshire: types 1, 2, 3, and 10, based on recordings made by R. S. Ridgely in Jul and Aug 2009. Young (*op. cit.*) also describes the primary cone types used by each as the seasons change. It is not yet clear whether these call types represent different races in the traditional sense or if they should be considered incipient species.

White-winged Crossbill *Loxia leucoptera*

Status. Casual and unpredictable visitor throughout the year, most often found from early September to mid-November, particularly in years when the hemlock and spruce cone crop fails in the far north or is abundant in New Hampshire.

Early reports to 1950. The first known state record is that of Brewster at Lake Umbagog 25 Aug 1874 (Griscom 1938). Brewster considered it an irregular resident and visitant there, an erratic but probable breeder and common less often than Red Crossbill; he recorded it in 15 of the 39 years he visited the lake in 1871–1909 and believed

it was breeding there in May 1880, Feb 1886, and in Aug of 1887 and 1895, though no nest was found. Goodhue (1877a) did not list it for Webster, and Dearborn (1898) thought it “unusual” in Belknap and Merrimack Counties and only saw it once, a flock at Alton 25 Jul 1895. Batchelder and Fogg (1900) said many were at Manchester in the 1899–1900 winter, peak numbers being 20 Feb, the same winter as a great Red Crossbill flight. Howe (1901–1903) reports a male shot at Mt. Cardigan 27 Aug 1895. Allen (1903) called it a “permanent resident” of the Upper Canadian Zone in Coos County and the White Mountains, occasionally found in summer above 3000 feet elevation in the Presidential Range, of erratic occurrence elsewhere. He also noted a major incursion in the fall of 1899.

Dearborn (1903) also reported the great flight of 1899–1900 as far south as Durham where it was otherwise rare. Marble (1927) called it “very irregular; sometimes abundant” at Crawford Notch. Goodhue (1922) reports 20 at Webster in the last week of Aug 1899 and birds present there until Apr 1900; his only other reports were 20 Oct 1906, 10 Nov 1906, and “scattered records since.” In contrast, White (1924b, 1937) did not even mention it for nearby Concord. Wright (1911) thought it “rare” in the Jefferson Region, having reports of 60 on 5 Jul 1904, 2 on 18 Aug 1904, 2 on 14 Jun 1906, and 4 reports of 1 to 15 birds from 12 Sep to 6 Oct 1908, a year in which migrants reached eastern MA in Oct and Nov. Single birds were also in the Jefferson region 27–28 Aug 1910. Bagg and Eliot (1937) reported 1 at Laconia in Mar 1909, and Thayer (1912) considered it very irregular at Dublin, though sometimes common, presumably in flight years, “almost certainly nest[ing] in the Monadnock spruce woods.”

J. L. Peters collected 3 specimens in Crawford Notch on 4, 22, and 23 Sep 1911 (MVZ #128378–128380), but we have been unable to find any specific records for New Hampshire from 1912 to 1935, though the species was surely present periodically during that time. There was a great flight into Essex County, MA, from late fall 1933 to spring 1934 (Griscom and Snyder 1955) that must have passed through southern New Hampshire. Reports submitted to RNEB 1936–1949 include every year except 1943 and 1945. There was a significant flight from 14 Sep 1940 to 13 Apr 1941 that reached as far south as Dublin 24 Dec 1940 (J.M. Abbott) with a peak count of 150 at Hanover 27 Jan 1941 (C.A. Reynolds). From then its appearance was spotty and in small (1–15) numbers until Oct of 1949 when sizeable flocks reached the White Mountains but were not found farther south.

1950 to present. Continues as an erratic visitor to most parts of the state, subject to periodic irruptions from the north; still not confirmed to breed but probably does so occasionally. Numbers seem little changed in the last several decades.

This species can literally turn up at any time of year and has been proved to breed in every month of the year elsewhere in its range. It frequently begins to arrive in July or August in flight years but is recorded in all other months randomly in non-flight years. In some cases, flights that became evident south of New Hampshire were little noted in the state: though many were observed in MA from Aug 1952 to Mar 1953, from Oct 1972 to Mar 1973, from Sep 1975 to Apr 1976, and from Oct 1977 to Mar 1978, numbers recorded in New Hampshire were not exceptional during those periods. Conversely, widespread and large flights were noted in the state that did not reach eastern MA such as one from 7 Jun 1958 to 5 Apr 1959, particularly in the White Mountains northward with “hundreds” at Jefferson 20 Jul 1958 (K.C. Elkins *et al.*).

Similar movements occurred in Dec 1960 when 325+ were at Pittsburg for the CBC and from late Jul to Dec 1963 when a peak of 200 was reached at Pittsburg 5 Nov 1963 (F.T. Scott *et al.*), though all were gone from the north country by May 1964. A widespread flight that reached much of southern New Hampshire extended from 31 Aug 1965 to 25 Mar 1966. A significant flight began by 20 Jun 2000 and numbers in the 10–75 range were recorded frequently throughout the Umbagog region into Aug, including many singing males; total numbers present were surely in the hundreds and many probably bred though this was not proved; a few were still being noted in family groups into the first week of Oct and 223 were recorded on statewide CBCs on 21 Dec 2000 (*fide* R.A. Quinn). A major invasion occurred in 2008–2009 with a flock of 60 at Woodstock as early as 28 Jul 2008 (B. Griffith), major southbound migration in the first 2 weeks of Nov followed by 573 on the statewide CBCs and a few still south of the White Mountains in the first week of May. As pointed out by Hunt (2009a), there has been no pattern to its winter irruptions 1987–2009.

During the *Atlas of Breeding Birds* project 1981–1986, 6 “probable” breeding sites were located in the state, all from the White Mountains and Coos County, and all in 1984–1985, almost certainly related to an irruption that began in 1984 (Foss 1994). This species has been recorded at Star Island twice in the fall and twice in winter: 7 there on 16 Nov 1967 (E.W. Phinney *et al.*), 5 there 17 Nov 1963 (E.W. Phinney *et al.*), 2 there 19 Dec 2010 (L. Medlock *et al.*), and 1 there 1 Feb 1970 (R.W. Smart *et al.*).

Common Redpoll *Acanthis flammea*

Status. Annual winter visitor or transient in highly variable numbers, rarely appearing by late October, occasionally by late November or December, more usually in January or February but sometimes not until March.

Virtually always gone by mid-April, rarely to month-end.

Early reports to 1950. The first known records for the state are those of 11 birds collected at Hollis by J. Dwight between 2 Feb and 14 Apr 1875 (AMNH #366660–366670), a major flight year. Next earliest report is that of Goodhue (1877a) who called it an “irregular winter visitor, occasionally occurring in ‘thousands.’” The first 1 found by Brewster (Griscom 1937; the exact state not specified) at Lake Umbagog was on 11 Oct 1892, foreshadowing the major flight of early 1883 (Griscom and Snyder 1955). M. C. Harriman “took several” in the early 1880s (Goodhue 1922). Brewster also found birds at Lake Umbagog on 21 Oct 1884 and on 16 Oct 1889, the first signs of major flights later in both of those winter seasons (Griscom 1937). Nash (1888a) reported it common in the winter of 1887–1888 at North Conway. There were major incursions in the winters of 1896–1897 that reached Concord (White 1937) and in 1899–1900 that reached Durham from Nov to late Mar (Batchelder 1900, Dearborn 1903) and extended from ME (Palmer 1949) south into MA (Griscom and Snyder 1955).

The next big incursion was in the winter of 1908–1909; Davis (1909), Bagg and Eliot (1937), White (1937), and Thayer (1912) described birds as present from October to April. White (1911) described it as a “regular winter visitor” in the Jefferson region citing observations on 24 Oct 1910 and irregularly after 1 Nov 1911. Hinds (1914) noted it at Grafton 16 Apr 1914. Another major irruption occurred in 1918–1919; White (1937) recorded birds at Concord from 6 Dec to 26 Mar and up to 500 on 21 Mar 1919. White (*op. cit.*) also noted good numbers at Concord in 1920 and 1926, while Foster (1936) recorded flocks in Jan and Feb of 1924 at Manchester. Another big flight recorded at Concord was in the winter of 1927–1928, with smaller numbers there in 1929 and 1930 (White 1937).

Reports submitted to RNEB 1936–1949 show a sizeable flight from Jan to 10 Apr 1938 with a high count of 250 at Manchester 14 Mar 1938 (E.J. Goellner), another large invasion 1 Feb to 1 May 1939 with 1000 at Hanover 26 Mar to 15 Apr (Weaver 1940), and an even bigger flight 1 Dec 1940 to 10 Apr 1941 with a peak of 3000–4000 birds at West Lebanon 25 Mar 1941 (R.L. Weaver). From that year only moderate numbers were noted until the winter of 1946–1947 when the first birds were seen at New Hampton 27 Oct 1946 (S.A. Eliot, Jr.) and the flight extended well into MA at least until late Feb (Griscom and Snyder 1955). Another statewide flight extended from Jan to 19 Mar 1949 when 700 were at New Hampton (V.H. Hebert).

1950 to present. Continues to occur annually but to be erratic as to date of arrival, numbers present, and statewide distribution. Earliest known fall arrival since 1950 is 1 at Columbia 4 Oct 1997 (D. and B. Killam) and

latest known on the mainland in spring is 12 May 1994 at Thornton (S. Bailey). The only known records for Star Island are 15 there 26 Oct 1969 (L.G. and E.W. Phinney) and a very late straggler there 29 May 1972 (R.S. Holt *et al.*). In non-flight years, numbers recorded can range from a handful to the about 250 reported range by all observers statewide. There have been 7 big irruptions since 1950 in which numbers in the 1000 range have been recorded, echoing the situation in MA. There have also been years when the number of birds in New Hampshire qualifies as a “flight” but comparable numbers did not reach so far south as MA. As pointed out by Hunt (2009a), the Backyard Winter Bird Survey results show that peak winter numbers have occurred essentially biannually in even-numbered years 1987–2008, the exact opposite of winter peaks in American Goldfinch and Purple Finch numbers, though the height of redpoll peaks varies considerably. The following are major irruption years:

1952–1953: 1500 estimated at Concord 8 Mar; 1000 at Kingston 21 Mar.

1959–1960: 29 Oct to 24 Apr; 600+ at the coast 24 Feb.

1961–1962: 29 Oct to 26 Apr; 500+ at the coast 28 Jan.

1969–1970: 26 Oct to 11 May; peak count 1100+ at the coast 1 Mar; flight did not reach MA.

1971–1972: 3 Nov to 24 Apr; several single counts in the 250–500 range; flight did not reach MA.

1973–1974: 24 Dec to 28 Feb; a few flocks in the 200+ range; stronger flight in MA.

1975–1976: 22 Oct to 28 Apr; peak count 932 at Laconia 27 Dec.

1977–1978: 17 Dec to 11 May; peak count 467 at Errol.

1981–1982: 30 Oct to early May; “thousands” passed through mid-Apr to early May.

1991–1992: 21 Dec to 30 Apr; peak count 326 on Pittsburg CBC; several 100+ flocks in Apr.

1993–1994: 5 Nov to 12 May; 4029 seen on CBSs statewide of which 1342 were at Laconia/New Hampton 1 Jan; peak northbound passage 22 Mar to 13 Apr.

1997–1998: 4 Oct to 29 Apr; 1877 on statewide CBCs of which 251 were at Laconia/New Hampton 27 Dec 1997.

1999–2000: 21 Oct to 29 Apr at Seavey Island; 2104 on statewide CBCs of which 399 were at Lake Sunapee 18 Dec 1999.

2001–2002: 31 Oct to 18 Apr; 600 at Sandwich 4 Nov; 1178 statewide CBC total of which 258 were at Nashua.

2003–2004: 9 Oct to 20 May; 4394 on statewide CBCs including 552 at Sandwich.

2007–2008: 16 Oct to 23 Apr; 2885 on statewide CBCs with 327 at Lee.

2008–2009: 2 Nov to 17 Apr; arrived late so only 137 on statewide CBCs but 600 at Keene 3 Feb and 600 at Colebrook 14 Feb plus aggregate reports exceeding 1000 birds from elsewhere in Jan and Feb.

Taxonomic note. The usual form occurring in the state is *A. f. flammea*, but the forms *A. f. holboelli* (a taxon now considered invalid) and *A. f. rostrata* were both collected in northeastern MA during the flight years 1883, 1890, and 1947, and so surely occurred in New Hampshire at least in those years. *A. f. flammea* and the “Greater” Redpoll *A. f. rostrata* are believed to intergrade, sometimes making field identification problematic. Batchelder and Fogg (1900) report several of the form *A. f. rostrata* at Manchester in the winter of 1899–1900. Goodhue (1922) reports the collection of “several” of this form at Warner in the early 1880s; the current location of such specimens is unknown. In the 2007–2008 incursion, both *A. f. flammea* and *A. f. rostrata* were photographed and carefully identified (Donsker 2008a). See the definitive paper by Brinkley *et al.* (2011) for identification parameters.

Hoary Redpoll *Acanthis hornemanni*

Status. Erratic and uncommon to rare winter visitor, always in association with major irruptions of Common Redpolls.

Early reports to 1950. The first record of this bird in the state was that of Dearborn (1903) who mentions 1 taken by H. A. Shaw at Hampton and still in his collection at the time of writing, the date and locality of collection not provided. Goodhue (1922) collected 1 at Webster 4 Nov 1904 but the specimen cannot now be found. A redpoll flight in 1909 mentioned for ME by Palmer (1949; 1 Hoary collected) brought 2 Hoaries to Center Ossipee 2 Apr 1909 (Davis 1909). The next report is of 1 captured, examined in the hand and banded at Hanover 23 Mar 1939 (R.L. Weaver). An exceptionally early 1 was found at Andover 20 Oct 1941 by a very careful observer (K.C. Elkins), and 2 were at Hanover 19 Mar 1944 (*fide* W.E. Lanyon). Other reports submitted to RNEB 1936–1949 include 1 from Stratford in Mar 1947 (no observer or specific date given), a year in which the species was found at 7 localities in northeastern MA. In Jan 1949 a significant redpoll flight also reached northeastern MA and continued into Feb; the only New Hampshire reports for Hoaries from that flight were 1 at New Hampton 10 Mar 1949 (V.H. Hebert) and 1 at Monroe 12–27 Mar 1949 (I.F. Hunt).

1950 to present. Continues to be erratic, always rare, and usually occurs only during major winter incursions of Common Redpolls; numbers can range from 0 to 10 statewide. Seldom found before January, the earliest

known since 1950 being 1 at Whiteface Intervale 8 Nov 1997 (A.J. Vazzano). In flight years sometimes arrives in December, but most records are of birds first detected in late January to March. Latest known in spring is 1 at Gilford 16 Apr 1972 (W.S. Lord). The following are Hoary Redpoll reports during Common Redpoll irruption years (except for 1968–1969):

1952–1953: singles 14 Feb at Bow 21; Feb to 1 Mar at Concord (R. Heald); and at Antrim (E. McCabe).

1959–1960: 1 at Hanover 16 Feb (C. Wellman); 1 at New Hampton 8 Mar (R.W. Smart); 1 banded New Hampton (J.P. Merrill *et al.*).

1961–1962: 1 at Rye 26 Mar (A.C. Borrer *et al.*).

1968–1969: 2 at Concord 21 Dec (H.B. Miller, M. Smith); 1 at Hampton 5–6 Feb (R.W. Lawrence, M.G. Bouchard *et al.*); 1 at Concord 28 Mar (H.B. Miller); 1 at Littleton 8 Apr (F. Cordelle).

1969–1970: singles at Nashua 14 Dec 1969 (M.G. Bouchard) to 1 at Gilford 29 Mar 1970 (W.S. Lord); 10 birds at 9 different localities.

1971–1972: 1 at Goffstown 18–29 Feb 1972 (H.W. Parker) to 1 at 16 Apr 1972 at Gilford (W.S. Lord); 9 birds reported at 7 different localities.

1973–1974: 2 at Plymouth 26–27 Feb (K.C. Elkins *et al.*).

1977–1978: 1 at Lebanon 12 Feb (D.W. Brainard); 1 at Concord 15 Feb (H.B. Miller); 1 at Portsmouth 18 Mar (E.W. Phinney).

1981–1982: 5 at Manchester 2–28 Feb 1982 (M.T. Martin) to 1 at Andover 2–3 Apr 1982 (K.C. Elkins); 15 birds reported from 6 different localities.

1997–1998: single birds at Sandwich 8 and 30 Nov 1997 and 23 Dec 1997 (all A.J. Vazzano); 1 at Columbia 13 Jan 1998 (D. and B. Killam); and 1 at Concord 28 Mar 1998 (D. and B. Soule).

1999–2000: 1 at Sandwich 11 Mar 2000 (A.J. Vazzano *et al.*).

2001–2002: 1 at Sugar Hill 21 Jan 2001 (J.C. McIlwaine); 1–2 at Hanover 10–17 Feb 2002 (K. Bluge, T. Rosenmeier); 1 at Sandwich 14–29 Mar 2002 (A.J. Vazzano).

2003–2004: 1 at Sandwich 8 Dec 2003 (A.J. Vazzano) to 2 there 15 Apr 2004 (A.J. Vazzano); 1–3 birds reported from each of 15 localities.

2007–2008: 1 at Plymouth 25 Nov 2007 (B. Griffith) to 1 at Westmoreland 11 Feb 2008 (C. Seifer); about 15 birds reported from 7 localities.

2008–2009: 1 at Farmington 22 Jan 2009 (J. Lambert) to 1 at Sandwich 8 Apr 2009 (A.J. Vazzano); about 16 birds reported from 11 localities.

Taxonomic note. During the 2003–2004 incursion and again in the 2010–2011 incursion, at least 10 Hoary Red-

polls of the form *A. h. exilipes* were discovered in a large flock of Common Redpolls at Keene and definitive photographs were taken (Smith *et al.* 2004). In the 2007–2008, 2008–2009, and 2010–2011 incursions, several of nominate *A. h. hornemanni* were observed and photographed; also see Donsker (2008a). See the definitive paper by Brinkley *et al.* (2011) for identification parameters.

Pine Siskin *Spinus pinus*

Status. Regular migrant, uncommon and local breeder, and a winter resident which varies from uncommon to abundant. Breeds irregularly, some years not breeding at all. Not restricted to coniferous forest; has rarely nested in the southern part of the state. Its numbers seem little changed in 150+ years.

Early reports to 1950. The earliest known record for the state is that of Brewster who found it breeding at Gorham in 1869 (Bagg and Eliot 1937). Griscom (1938) reports that Brewster found it present at Lake Umbagog most years in 1871–1909 though it bred there irregularly. A major incursion there occurred in 1873; Brewster noted that its breeding season there was “quite protracted,” usually in June but sometimes into August. Dwight collected 1 at Hollis 12 Apr 1875, 2 there 3 Mar 1876, 1 on 13 Jul 1876, and 1 at Campton Village 27 Jul 1885 (AMNH #367132–367136). Weaver and West (1943) mention a big flight year in 1878. Goodhue (1877a) called it common in summer at Webster, with only a few in winter. Dearborn (1898) called it an irregular visitor from the north in Belknap and Merrimack Counties but he (1900, 1903) thought it only a winter visitor in Durham from October to April, having been abundant in the winter of 1899–1900, and he (1905) recorded it breeding in Northfield in 1900. Howe (1901–1903) reported it from Plymouth, and Marble (1907) considered it common from June through September at Crawford Notch 1901–1907. Allen (1903) called it a “common permanent resident” of the coniferous forest, found in the southern part of the state only in winter; it was known to have bred in Hanover in April and found at the peak known elevation of 4500 feet in the White Mountains 15 Jun 1902. Thayer (1912) considered it very irregular in the Dublin area, varying from common to abundant when it did occur. Wright (1911) thought it a regular migrant but only an uncommon summer resident in the Jefferson region though it was found in the White Mountains in summer and believed to breed there. Goodhue (1922) had little to say about it in Webster other than that it nested there about 1918. Foster (1936) reported flocks at Manchester in Jan–Feb 1924. White (1924b) was similarly brief about Concord, considering it erratic and uncommon there; 13 years later he (1937) only added that it was a transient and winter visitant between extreme dates of 21 October



to 6 April. Weaver (1940) records a big influx from Jan to May 1939.

Reports submitted to RNEB show it occurring annually 1939–1950 with a major incursion in the winter of 1940–1941, extreme dates 15 December to at least early May and peak numbers in the last week of April. In non-flight years, usual fall arrival south of breeding areas in the White Mountains and Coos County is early to mid-October, and latest south of the mountains is usually early to mid-May. Nesting south of the usual breeding areas frequently occurs after incursion years, examples being the springs of 1941 and of 1943. After the flight that began 15 Dec 1942, birds were found nesting at Atwell 27–31 Mar 1943 (F.P. Lord, F. West) and were still present at Hanover into mid-Jun. During the 1940s, siskins were found in the White Mountains and Coos County regularly but not necessarily every year from May to August, and nests or young were observed occasionally. A moderate flight began 13 Oct 1949 (R.B. Emery); it peaked the following Dec, and the last birds left sites south of the White Mountains 24 May 1950 (V.H. Hebert).

1950 to present. Continues as a regular and occasionally common transient and winter visitor, erratic as to numbers, timing and distribution in the state.

Fall. Southbound migrants sometimes appear south of the White Mountains by early to mid-September, especially in years when most migrants will winter south of New Hampshire. In such cases, after a major migratory push in October and November, relatively few birds may be left in the state by the end of the year. An example was the major incursion of 1952–1953 when large numbers reached MA (Griscom and Snyder 1955) but few were

present in New Hampshire in late Dec. Conversely, in some seasons the majority of the birds found in the state in fall remain in the White Mountains and northward. A major flight occurred in 2008–2009 which spread statewide by Nov; at least 2000 were seen passing south over Pack Monadnock (J. Tilden *et al.*) by the end of Oct, and 3927 were recorded on the statewide CBCs; birds lingered south of the White Mountains well into May.

Migrants have been found at Star Island as early as 23 Sep 2007 (E.A. Masterson *et al.*), and 150 were observed at sea migrating south off the Isles of Shoals and Jeffreys Ledge 22 Oct 1977 (D.W. Finch *et al.*). Mid-October arrival statewide is perhaps the most typical.

Winter. Highly variable numbers, sometimes few in most parts of the state or large numbers wintering: 2000+ Dec 1958, 2000+ Dec 1961. Statewide CBC totals have varied from only a few such as 13 (late Dec 2007) to 2600 (late Dec 1972). Occasionally, birds do not arrive until January or February; CBC total in 1971 was only 154 but hundreds appeared in the central and southern part of the state in early Jan 1972. As pointed out by Hunt (2010b), after spikes in 1988, 1990, and 1992, peak winter numbers 1993–2008 exhibited no regular pattern, probably a function of the abundance of spruce cone crops in eastern Canada, but another spike occurred in 2010.

Spring, summer and breeding. In years where most birds winter south of New Hampshire, northbound migrants often begin to appear in numbers by early to mid-March or even early April: 1000 at Errol 15 Mar 1963 (C.O. Barry). Especially after big statewide irruptions or years where many birds winter south of the state, some northbound birds often linger in the central and southern parts of the state through April and into May. In such cases, local nesting sometimes occurs in those areas. An example was the spring of 1985 following a big flight when workers on the *Atlas of Breeding Birds* project 1981–1986 confirmed or thought probable nesting at 37 sites, more than half of which were south of the White Mountains (Foss 1994). Twenty were at Bethlehem 1 Jun 1996 (A. Strong). Twelve were at a feeder including 2 juveniles still begging for food at Wentworth 2 Jun 1997 (R. and J. Carreaux), an adult and 4 fledglings were at Strafford 31 May 2009 (S. Young), a pair with a fledgling were at Concord 23 May 2009 (P.D. Hunt), and a pair with a fledgling were at Concord 30 May 2009 (R.A. Woodward, R.A. Quinn). Probable late northbound migrants were at White and Seavey Islands 28 Apr 2002 (D. Hayward *et al.*) and at Star Island 3 Jun 1973 (L.G. Phinney *et al.*) following the 1972–1973 incursion. Typically found on Appledore, ME, in May (*fide* R.W. Suomala).

Almost always present in the White Mountains and Coos County from June to August in highly variable numbers; may breed there occasionally, though no nest has yet been found anywhere in New Hampshire. Breeding pop-

ulation listed as declining by Hunt (2009b), and New Hampshire BBS population trend data show very little change in 1966–2009 but a sharp 11.3% decline for 1999–2009, the latter in line with the regional rate of 15.9% (Appendix IV). Occasionally may linger in the central or southern part of the state as far south as Dublin (Allison and Allison 1979), Kensington 9 Jul 2007 (G.W. Gavutis, Jr.), and Hillsborough to early Jul 2004 (I.C. MacLeod).

American Goldfinch *Spinus tristis*

Status. Common resident and breeder virtually statewide except for the highest elevations. Typically withdraws in winter from higher elevations and the northern coniferous forest. Population apparently little changed in 150 years and population trend listed as stable by Hunt (2012).

Early reports to 1950. The “Yellow Bird, *Fringilla tristis*?” of Belknap (1792) surely belongs here. Brewster found it a “[c]ommon to abundant summer resident” at Lake Umbagog in 1871–1909, his latest record in fall being 10 October (Griscom 1938). Maynard (1871) also indicated that it left the northern part of the state in winter. Goodhue (1877a) thought it common in summer and uncommon in winter at Webster. Nutter (1892) found it nesting near Milan in Jul 1877. Dearborn (1898) considered it common year-round in Belknap and Merrimack Counties and in Durham (1903) in the southern part of the state, and also (1905) at Northfield. Howe (1901–1903) found it a common summer resident at Bridgewater. Allen (1903) called it a common permanent resident below 3000 feet “over most of the state” except in heavily-wooded areas, therefore presumably excluding much of Coos County; he also noted the elevation record of it “passing by the summit of Mt. Washington” at 6288 feet. Marble (1907) thought it uncommon in Crawford Notch from June to late September. Thayer (1912) considered it a common summer resident at Dublin but usually absent in midwinter. Wright (1911) thought it a very common summer resident but also absent in winter from the Jefferson region. Goodhue (1922) merely noted that it nested locally at Concord, and White (1924b, 1937) called it a common summer resident there, uncommon and in irregular numbers there in winter. Several of the above early writers noted that this species usually breeds in July and August. Allan (1931) reported it at the Isles of Shoals 11 May 1930 and 10 Nov 1930 without saying in which state.

Reports submitted to RNEB showed it to be a common transient and summer resident 1938–1950. In this period there were no reports north of New Hampton or Hanover after mid-October in any year except once at Monroe. Peak fall count was 350+ at New Hampton 2



Nov 1950 (V.H. Hebert) and peak in spring was an exceptional 800 at Hanover 22 Mar 1943 (L. Forsyth, E. Haskins), a total that surely included many northbound migrants. Extreme nesting dates were a bird collecting nest material at Ossipee 9 Jul 1949 (E.E. Pratt) to nestlings still being fed 25 Sep 1944 at Hanover (L. Forsyth).

1950 to present. Seasonal migrant and transient, common and widespread breeder. Its breeding population is listed as increasing by Hunt (2009b).

Fall. Summer residents of the White Mountains and Coos County typically begin leaving those areas by late September to early October. Numbers in the north are sometimes down to flocks in the 2–25 range by early November to early December, but occasionally can range up to 100–200. Southbound migratory movement in the central and southern parts of the state often peaks in mid- to late October, especially in years when most birds winter south of New Hampshire. Peak known migration at the coast is 2531 at Hampton 9 Nov 2008 (S.R. and J. Mirick), paralleling to a degree the huge flight of Pine Siskins that year. Occasionally large-scale migration is later and high numbers are still present into December: 1000 at Pittsburg 2 Dec 1967 (F.T. Scott). Twelve were at Star Island 13 Nov 1966 (ASNH field trip).

Winter. Usually absent from the northern part of the state and the White Mountains but in some years may linger there to late December and early January; flocks in the 10–25 range are usually the largest, though flocks numbering 100–200 have been recorded on CBCs. In the central and southern parts of the state, flocks are more usual and larger. Statewide CBC totals have ranged from under 500 to 3510 in winter 2009–2010 and 6807 in win-

ter 2006–2007. Some northbound migrants have been suspected by late March: 400+ at Pittsburg 31 Mar 1968 (V.H. Hebert). As pointed out by Hunt (2009a), peak winter numbers have been essentially biannual in odd-numbered years 1987–2008, exactly the opposite of peak numbers for Common Redpolls.

Spring. Usual northbound migration is typically mid-April, sometimes as late as early May. High spring counts are 500+ at Hanover in mid-May 1971 (F. Bowes) and 500 at Claremont 19 Apr 2007 (H. Burke *et al.*). However, major northbound flights following big flights the fall before are 1516 at Seabrook 7 May 2008, 1270 there 18 May 2008, and 2320 there 8–12 May 2009 (all S.R. and J. Mirick). Usually well distributed in Coos County by mid-May. Fifteen presumed late migrants at Star Island 30 May 1968 (ASNH field trip).

Summer and breeding. This species breeds throughout southern New Hampshire and regularly in appropriate habitat in the White Mountain foothills and the northern part of the state. In the 1981–1986 *Atlas of Breeding Birds*, it was confirmed or believed probably breeding in 137 priority atlas blocks (Foss 1994). Long-term New Hampshire BBS population trend data show almost no change in 1966–2009 or 1999–2009 (Appendix IV). As noted above, breeding is typically from July to early September.

European Goldfinch *Carduelis carduelis*

Status. Very rare visitor, native to the Palearctic region. Hypothetical due to uncertain provenance. Most birds are presumed to be escapes, but the repeated appearance of this and 3 other vagrant finches from Western Europe (Common Chaffinch, Brambling, Eurasian Siskin) in the northeastern United States leaves open the possibility of natural occurrence in New Hampshire.

Early reports to 1950. First certain record is 1 in the Connecticut River valley at Hanover 13 May 1937 (F.P. Lord, E. Haskins, Mrs. Mills). Mills (1937) also cites the report of 3 birds seen together at Hanover “about 1932” by one D. Miller, a visitor from England who did not realize the species was not native to New England.

1950 to present. Reports of at least 11 separate single birds including at Crawford Notch 17 Jun 1967 (M. Coskren), Goffstown 11 Feb 1970 (H.W. Parker), Allentown 6 Dec 1974 to 4 Feb 1975 (H.W. Parker *et al.*), Campton 10 Jan 1977 (G.E. Davis), Spofford 21 Dec 1981 (*fide* W. Nichols), in a flock of American Goldfinches at Wolfeboro 11–14 Jan 1984 (W.D. Kipp *et al.*) and possibly the same individual also in a flock of American Goldfinches at Milan 29 Apr 1984 (A. Johnson *et al.*). Other reports include single birds at a feeder in Hollis 12 Apr 1985 (J. Graney), at Bedford 30 Apr 1994 (B. Wright) and there again on 12 Apr 1995 (J. and H. Newberry), at Barrington 1 Jul 2001 (R. Costello), at Gilmanton 28 Nov

2004 (J. Stockwell), and at Hopkinton 8 Aug 2005 (D. Cooper).

Remarks. One was found in a flock of American Goldfinches at Bangor, ME 10–11 Jul 1938 (Palmer 1949). Either or both of the 1930s reports above and the 1938 ME report could have involved strays from the feral population established by 1900 on Long Island, New York, which persisted until at least 1955 (Bull 1964, 1974). Alternatively, as reported by Veit and Petersen (1993), “European Goldfinches were recorded more or less continuously in eastern MA [from 1900] until 1938,” and were found as far west as the Connecticut River valley at least 1930–1934 (Eliot 1933, Bagg and Eliot 1937); these birds could have been the source of New Hampshire records farther north in the same river valley in the 1930s. There are 2 accepted records for VT in 1987 and 1995 (C.C. Rimmer pers. comm.) and 2 records “thought to be escapes” for ME (P.D. Vickery pers. comm.). Now that a feral breeding population has been established in the western Great Lakes Region at least from 2002–2009 (Craves 2009), vagrants from that area are possible, as are hurricane-blown birds from Bermuda where it has been firmly established since at least the 1890s (Dobson 2002).

Evening Grosbeak *Coccothraustes vespertinus*

Status. Very uncommon winter visitor and local breeder, primarily from the White Mountains northward.

Early reports to 1950. The first known records in New England east of the species’ historical range in the north-central United States were during the invasion of 1890. Brewster (1890) reported the first New England specimen taken at Seabrook 3 or 4 Jan 1890, Colburn (1890) reported a male taken at Francetown 27 Mar 1890 (T.E. Bishop), Melzer (1890) reported 9 collected at Milford 6 and 9 Jan 1890, Call (1890) reported 1 collected at Henniker 1 May 1890, and Dearborn (1898) reported 2 collected at Newmarket (J. Shute). Though not in flight years, Goodhue (1922) noted a small flock at Franklin in Jun 1903, and Thayer (1912) reported a small flock at Dublin in early winter and a male collected there 7 Dec 1906.

There are no known records from 1906 until the next major flight year in 1911 when birds were reported in Rhode Island and other New England states. Storrs (1911) reported a small flock at Lebanon 2 Jan 1911, and Wright (1911) noted 1 at Lancaster 15 Jan 1911 (F.B. Spaulding). Rogers (1913) reported 2 sightings near Jackson about 22 Feb 1913, and Fogg (1913) reported 7 at Manchester 6 Mar 1913.

The next major flight year was 1916. Selleck (1916) reported some at Exeter 3–11 Apr 1916; Buswell (1916) mentioned an invasion at Meriden in late Feb and Mar 1916; Goodhue (1922) reported a flock at Franklin to 16

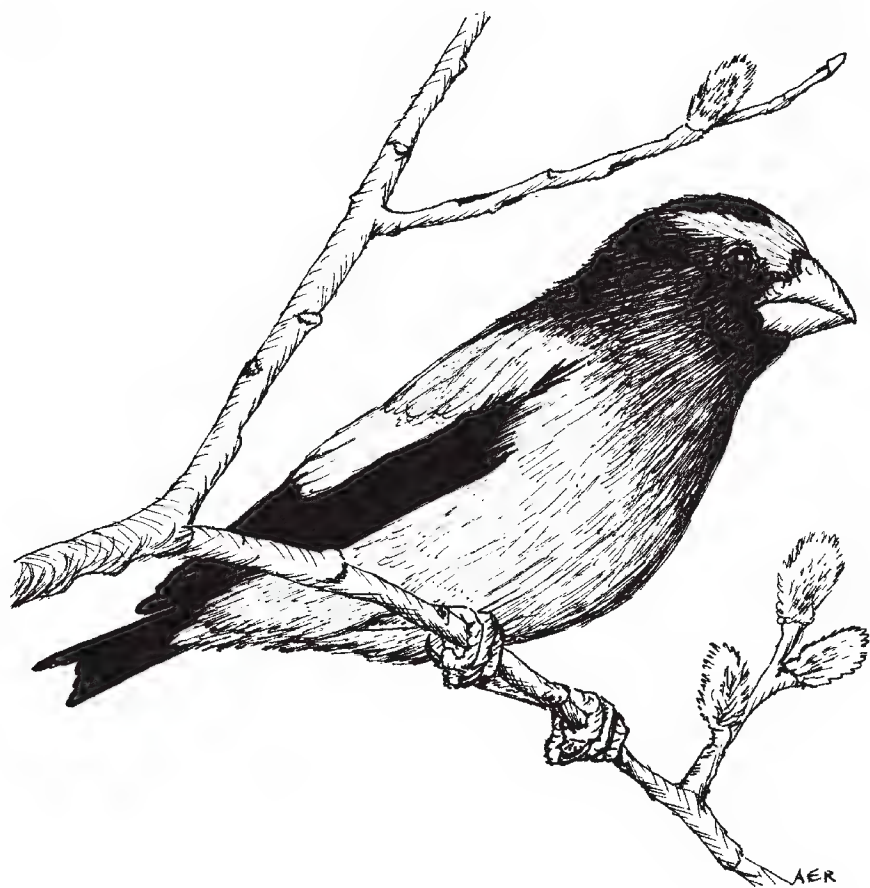
Mar 1916, a flock of 8 at Penacook in late Feb 1916, and a flock in the Connecticut River valley in Nov 1916; May (1916) reported 2 females at Ashland 2 Mar 1916; Burchell (1916) wrote of birds at Lancaster in Feb and Mar 1916, lingering to May; Robbins (1916) reported 1 at Intervale 29 Jan 1916 and about 12 there 3–4 May 1916; Danforth (1917a) mentioned birds present in East Jaffrey 28 Feb to 21 Apr 1916; and Townsend (1917a) mentioned birds at Nashua in mid-Aug 1916 and a suspicion of nesting at Hanover that year that was never verified.

The next records were 1 at Concord 10 May 1920 (White 1924b, 1937), 4 at Jaffrey 25 Aug to 10 Sep 1923 (Danforth 1924, Baillie 1940), some in Concord 22 Feb to 25 Apr 1926 (White 1937), and 1 banded in Hanover 9 Mar 1928 that was recovered at Sault Ste. Marie, Michigan, (about 1200 miles away) on 27 Jan 1929 (Magee 1930). Prest (1930) reported 1 lingering at Manchester 8 May 1930.

The next winter surge was in the winter of 1933–1934. Magee (1934) reported 2 that had been banded in Michigan were retrapped at Peterborough, Magee (1934) reported birds banded in Michigan recaptured at Milford, and Forsyth (1934) reported birds at Hanover from late Jan to 12 May 1934 with a maximum of 62 on 16 Feb 1934. Reports submitted to RNEB for 1936–1949 show annual arrival anywhere from early October to mid-November in fall (though sometimes not until December or January), in flocks from 20 to 100, the earliest being 2 at Monroe 21 Sep 1949 (I.F. Hunt). The latest birds in spring usually did not linger past late May but some years they were gone by late March or early April, especially south of the White Mountains. The only summer records in this period were 2 found freshly dead at Hanover 7 Aug 1942 (R.L. Weaver), possibly suggesting local nesting, and a pair on 13 Jul 1949 at the base of Mt. Washington (J. Snapp).

1950 to present. Now very uncommon to rare in the northern parts of the state in both summer and winter. Spotty occurrence and local breeder in the southwest highlands and a few other localities south of the mountains. Major decline in breeding since 2000.

Fall. Formerly, southbound birds occasionally appeared in the central Connecticut River valley and the Lakes Region, though rarely in the coastal region, by late August or early September; peak southbound fall migration period was usually from mid-October to mid-November. In some years birds appeared in numbers (total of 50+) by mid-December. Major flights from fall into winter occurred in 1955–1956 (Shaub and Shaub 1957) and 1959–1960 (M.S. Shaub 1960), though in the latter season fewer birds were found in New Hampshire than in other New England states. Such numbers and movements have been much fewer since 1990. Total numbers present dur-



ing CBCs are variable, a statewide count of 4795 in 1972–1973 being the peak recorded. The Concord CBC has recorded this species only 3 times 1995–2010 (R.A. Quinn pers. comm.).

Winter. Now very uncommon to almost rare at this season. From the 1950s until the 1990s, present widely through the state January into March, though in most years numbers were lower than in the fall as birds moved south out of New Hampshire. Most years there were winter residents throughout the southernmost parts of the state; they were not always localized at feeding stations for long but rather, wandering flocks, and the species was generally scarce in the south-central part of the state. Carrier (1957) reported on a bird banded at Warner which was retrapped in Wisconsin. B. M. Shaub (1960) reported that 7 wintering birds banded in New Hampshire were later shot on their breeding grounds at St. Leon le Grand, Quebec. High winter counts in the southern part of the state are 750 at Durham 3 Mar 1963 (A.C. Borror *et al.*), 1900 at Milford on 19 Feb 1970, and 2300 at Bedford 20 Feb 1970 (both W. Riehl); note that these high counts all occurred at least 40 years ago. Average statewide CBC totals have declined significantly during the last 30 years: 3909 in the 1980s, 1235 in the 1990s, and 221 in the 2000s; peak of about 4800 in 1991.

Spring. Northbound migration can begin as early as late March to late April, but usual major movement north is typically in May, a few birds sometimes lingering into mid- or even late June south of the White Mountains. In the White Mountains and northward, the birds tend to be widely scattered. A female found at Lost River 15 Jun

1957 had been banded at Mountoursville, Pennsylvania, on 20 Apr 1956. A wanderer was at White and Seavey Islands 11 Jun 1998 (J. Ellis, D. Hayward).

Summer and breeding. Numbers of birds present in the White Mountains and northward are now very low at this season. In general since 1990, BBS survey numbers trended higher in this area until 2000 after which they declined (NHBR 21 [2]: 30 and 23 [2]: 36). Though birds had been observed in summer as early as the 1920s, the first confirmed breeding by the observation of young was in 1953 at Pittsburg (Wallace 1953). Breeding was suspected or recorded annually from 1954 to the 1980s with a big surge in 1957, though numbers were small. The 1981–1986 *Atlas of Breeding Birds* recorded 37 priority atlas blocks where breeding was confirmed or thought probable, showing a widely-distributed pattern from the White Mountains northward and only 4 blocks south of the Lakes Region (Foss 1994); 1 was on Mt. Monadnock in 1986, the southernmost site. In June and July 1999, 2001, 2003, and 2005, small flocks in the 2–8 range were found in several parts of the state south of the Lakes Region. Postbreeding birds occasionally appear in families at feeding stations from late July and early August.

See Hunt (2000) for regional historical perspective showing that New Hampshire winter populations rose on balance 1965–1985 but fell 1985–2000, even though the species' total breeding population increased throughout 1965–2000. She also suggests that winter birds in New Hampshire may come from eastern Canada where Eastern Spruce Budworm outbreaks have been fewer in recent years due to improved timber management practices, thus providing less food and therefore fewer young birds. Long-term New Hampshire BBS population trend data show a significant increase (+5.7% per year) during 1966–2009 but a very sharp decline (12.5%) in 1999–2009 (Appendix IV). Hunt (2009a) also points out that since 1987 and 1992, peak winter numbers have trended much lower as Eastern Spruce Budworm outbreaks declined; there is also a rough four-year peak cycle with low points in 1995, 1999, 2003, and 2007.

FAMILY PASSERIDAE

House Sparrow *Passer domesticus*

Status. First introduced in the United States at Brooklyn, New York, in 1850 and 1853 (E.C. Janeway *in* Foss 1994); introduced in Boston accidentally in 1858 and intentionally in 1868 and 1869 (Veit and Petersen 1993); and at Portland, ME as early as 1854 and 1858 (Palmer 1949). It was a local resident in New Hampshire by the late 1860s (Coues 1868). Now locally common and wide-

spread over much of the state except parts of Coos County and the White Mountains; evidence of a decline 1935 to date.

Early reports to 1950. Apparently never introduced directly into New Hampshire but spread there quickly after its arrival in the Boston and Portland areas. Over half of the entire state was appropriate agricultural habitat in the 1880s and the species' population grew quickly both in towns and in nearby rural areas, especially where there were horses. A surprisingly early report states that this species was already a local resident by the late 1860s (Coues 1868)—the time of its first successful introduction in Boston. Goodhue (1877a) did not mention it for Webster but it had reached Franconia and Bethlehem by 1886 (Faxon and Allen 1888). Dearborn (1898) thought its numbers had already peaked in Belknap and Merrimack Counties, noting that its numbers in Tilton had remained stable since 1892, and (1903) thought it “pretty thoroughly disseminated throughout the state.”

Brewster found it common as far north as farms between Dixville Notch and Colebrook 14 Jun 1896 (Griscom 1938). Allen (1903) considered it “abundant as a resident about the large villages and cities” but not increasing in central and northern New Hampshire. Marble (1907) did not mention it for Crawford Notch (2000 feet elevation) but 2 years later he reported that it was first found there in 1905 but did not nest there until 1909 (Marble 1909, Eastman 1910b). Thayer (1912) said it was well established at Dublin but not numerous outside of the village. Howe (1901–1903) did not mention it for Bridgewater though Wright (1911) called it “an increasingly common resident” at Lancaster by 1899 and said it was displacing Tree Swallows at Jefferson by 1903–1904. One was collected by F. B. White at Concord 1 Nov 1924 (MCZ #293821).

According to Forbush (1929), Bent (1958), and Griscom and Snyder (1955), its population peaked 1910–1915 and began to decline as automobiles and tractors began to replace horses. White (1924b, 1937) commented that it was no longer as numerous about Concord as it had been earlier. To a modest degree, part of this decline can be attributed to persecution by people who objected to this species outcompeting native species such as Tree Swallows, Eastern Bluebirds, Downy Woodpeckers, etc., for birdhouses and other nest cavities. Though there is almost no published information to document its extent, overall numbers appear to have declined slowly but steadily 1935–1950 as reforestation progressed and farming declined.

1950 to present. Some recent further decline; breeding population listed as declining by Hunt (2009b). May have become partially migratory in the northern part of its range.

Spring. Some migration suggested in March and April: the number present at Roxbury increased from 2 on 31 Mar to 10+ by 15 Apr 1972 (S.D. Gilcreast, Jr.); first spring arrivals at Wentworth were a male 5 Apr 1976 and a female 19 Apr 1976 (both H.M. Van Deusen); numbers at Charlestown increased from 30 on 1 Mar to 35–38 on 1 May 1978 (W.W. Kidder). Recent reports to NHBR have not included this kind of information.

Summer and breeding. National BBS data indicate a significant decline in the east 1966–1979 (Robbins *et al.* 1986) which continued in New Hampshire in the 1980s (E.C. Janeway *in* Foss 1994). The *Atlas of Breeding Birds* project 1981–1986 showed it to be present virtually statewide in appropriate habitat (Foss 1994) and there is little evidence of major change since though it has become uncommon in selected areas. However, shortly after the House Finch arrived in 1967, it began to spread rapidly through the state, especially south of the White Mountains and particularly in the House Sparrow's stronghold in cities and towns. House Finches outcompeted House Sparrows in many areas where the latter had had little competition for about 40 years (Kastner 1986). Long-term New Hampshire BBS population trend data show an average decline of 1.7% per year in 1966–2009 and 1999–2009 (Appendix IV). Recent declines in House Finch numbers (see species account) probably have reduced that species' competition with House Sparrows in some areas.

Fall. Migration has been observed from mid-October to mid-December with typical peak activity in the last week of October and the first week of November. Examples include a flock migrating at New Hampton 23 Oct 1975 (R.C. Hebert); 45 migrating there 17 Oct 1976 (V.H. Hebert); 125 at New Hampton at peak of migration 11 Nov 1965 (R.W. Smart); and 150, 75, and 25 at New Hampton respectively 1 Nov, 6 Dec, and 30 Dec 1966 (R.W. Smart). No recent reports of possible migratory activity are available. A presumed postbreeding dispersal bird was at the very summit of Mt. Washington at 6288 feet elevation 22 Sep 1975 (A. Lincoln, Jr.).

Winter. Statewide CBC data show significant fluctuations in numbers year to year but little overall change 1950–1970 and a gradual increase since 1980. If anything, any decline in numbers recorded on CBCs attributable to competition from House Finches appears to have been more than offset by an increase because of feeding stations, milder winters on balance, and an increase in observers. Average statewide CBC total was 5264 in 2000–2009.

Appendices

I. Reports of Exotics, Hybrids, Etc. in the Literature

The following list includes birds that have appeared in the published literature of New Hampshire ornithology but do not meet the criteria for additions to the lists of either accepted or hypothetical species for the state. Naturally-occurring hybrids are also included here.

American Flamingo *Phoenicopterus ruber*

Presumed escapes. Two records. One thought to have escaped from a place in MA in Apr 1965 was seen flying past Odiorne Point, Rye, the following 25 Nov (L.G. and E.W. Phinney). It was also present on the ME side of the Piscataqua River through Dec 1965. It was found at New Castle 5 Jan 1966 (L.G. and E.W. Phinney) and 16 Jan 1966 (R.W. Smart, H.C. Anderson) but succumbed to subzero temperatures shortly thereafter. A second bird was present 25 Jun to 21 Jul 1968 at Hampton Falls (L.G. Phinney, R.W. Smart, K.C. Elkins *et al.*).

Bar-headed Goose *Anser indicus*

Presumed escapes. A long-distance migrant native to Asia. One at Kensington 17–18 Apr 1982 (D.J. Abbott and S.D. Abbott). One at Jackson 7 Jul 1993 (H. and B. Heistand) and possibly the same bird at Jaffrey 1 Dec 1993 (C. Newton). One at Nashua 5 Sep 1994 (L. Rabs).

Common Shelduck *Tadorna tadorna*

One full-winged bird found at Tilton 27 Dec 1975 on CBC (D.J. Abbott, E.W. Phinney, S.A. Fogleman). There are 4 records for MA in the October–December period considered likely to have been natural occurrences (Veit and Petersen 1993, A.R. Keith pers. comm.), so the Tilton record may have been a valid vagrant also. See Brinkley (2010) for a discussion of the provenance of North American records in this species; the New Hampshire record is regrettably missing from this paper.

Ruddy Shelduck *Tadorna ferruginea*

A free-flying but rather tame bird was at Wolfeboro in late Nov 1982 (R.R. Rathbone). Presumed escape though it is a long-distance migrant in Eurasia.

Whooper Swan *Cygnus cygnus*

Probable escapes. One at Hampton Beach 3 Apr 1997 (K. Breen) and 1 at Rye 8 May 1998 (E. Johnson), both probable strays from MA where a pair that escaped elsewhere subsequently bred. One at the coast 29 Jan 2005 (J.P. Smith; photo NHBR 23 [4]: 5) is thought to have escaped from an aviculturist near Boston.

Swan Goose *Anser cygnoides*

Presumed escape. A free-flying bird was found in a flock of Canada Geese on a golf course in North Hampton Dec 2012 (J. Mirick and S.R. Mirick, A.R. Keith, R.P. Fox *et al.*).

Mandarin Duck *Aix galericulata*

Presumed escapes. A drake apparently mated with a female Wood Duck was present in Kensington 17 Apr at least to mid-May 1981 (G.W. Gavutis, Jr.) (*Seasonal Bird Records*, 17 [6]: 1). One appeared in Pittsfield 2 Apr 1992 (A.E. Robbins). There is now a significant feral population in California (Pranty and Garrett 2011).

Mallard x American Black Duck Hybrid *Anas platyrhynchos* x *Anas rubripes*

As the number of Mallards in New England has increased at the expense of American Black Ducks, intergrades between the 2 species have become increasingly common. The percentage of Mallards and Black Ducks shot 1999–2002 showing evidence of hybridization was 4.3% (WAP 2005).

Mallard x Northern Pintail Hybrid *Anas platyrhynchos* x *Anas acuta*

One was found at Laconia 27 Dec 1976 (K.C. Elkins).

Green-winged Teal x Eurasian Teal Hybrid *Anas carolinensis* x *Anas crecca*

One showing field marks of both forms at Sandwich 19 May 2001 (A.J. Vazzano, N. Beecher).

Red-crested Pochard *Netta rufina*

One shot by a hunter in the Suncook part of Pembroke on the Merrimack River about 25 Nov 1977. Presumed escape though it is a long-distance migrant to North Africa from its usual Eurasian range.

Common Goldeneye x Barrow's Goldeneye Hybrid *Bucephala clangula* x *Bucephala islandica*

A drake at Errol 19 Apr 2000 (R.A. Quinn) with characteristics of both species was with an adult drake Barrow's and Common Goldeneyes; a male at Seabrook 18–25 Mar 2004 (S.R. Mirick; photo NHBR 23 [1]: 10).

Hooded Merganser x Common Merganser Hybrid *Lophodytes cucullatus* x *Mergus merganser*

A duck of this suspected parentage at Hinsdale 19 Mar 1995 (*fide* NHBR editor).

Hooded Merganser x Common Goldeneye Hybrid *Lophodytes cucullatus* x *Bucephala clangula*

A adult male bird thought to be a hybrid between these 2 species was found at New Hampton 18 Apr 1952 in company with 1 adult male and 3 adult female normal-plumaged Hooded Mergansers (V.H. Hebert).

Spruce Grouse x Ruffed Grouse Hybrid *Falcipennis canadensis* x *Bonasa umbellus*

A bird with a black lower breast and upper belly, a dark gray back, and a tail with only a narrow black band on the tip was seen at Pittsburg 27 Sep 1960 (V. Armstrong). There is a specimen of such a hybrid at Acadia University, Nova Scotia (*Nova Scotia Bird Society Newsletter* 19 [2]: 141, May 1977).

Great Crested Grebe *Podiceps cristatus*

This European species is given as a “rare migrant” near Hanover (*fide* C.H. Storrs) in the unreliable list by Worthen (1891). Most likely a misidentification of Red-necked Grebe.

Northern Crested Caracara *Caracara cheriway*

Presumed escape. One at Newton 1 Aug 1965 was observed eating dog food at close range. It appears that several of this species imported illegally to Boston were released when the importers found the species was protected.

Purple Swamphen *Porphyrio porphyrio*

Possible escape. One “found feeding with poultry” at Hampton 29 Aug 1936 is now MCZ specimen #171892. While likely a refugee from a zoo or other source at that time, one appeared in Wilmington, Delaware, on 5 Dec 1990 for which “natural origin cannot be dismissed” (AOU 1998). A thriving feral population was later discovered in Florida; it was present at least by 1996 and possibly earlier (Pranty and Schnitzius 1998, Pranty *et al.* 2000, Pranty and Garrett 2011). More recently, Gill and Donsker (2013) have proposed two major species of this widespread bird: monotypic African Swamphen *P. madagascariensis* of Africa and Madagascar and Purple Swamphen *P. porphyrio* of Asia and Australia, which has several subspecies. The two species can be distinguished by the color of the wings and back. The occurrence of an African Swamphen as close as Bermuda in Oct 2009 (Pranty 2013) suggests the possibility of natural occurrence in New Hampshire. The feral Florida population consists of Purple Swamphens (*sensu* Gill and Donsker 2013). A recent examination of the MCZ specimen by curatorial staff has determined that it is almost certainly also one of the Purple Swamphen forms.

Blue Crane *Grus paradisea*

Escape. First noted at Rowley, MA, 28 Jun 1972 (Finch 1972). What is presumed to be the same bird appeared at Hampton Falls 6 Jul 1972 (R.W. Smart, G.S. Keith), at Amherst 23 Jul 1972 (P. Backus; photographed by J.H. Kennard), and at Milford 14 Aug 1972 (*fide* J.H. Kennard).

Glaucous Gull x Herring Gull Hybrid (Nelson's Gull) *Larus hyperboreus* x *Larus argentatus*

A single bird thought to have been this form was seen from a boat entering Portsmouth Harbor 26 Sep 1971 (A.C. Borrer, D.W. Finch, E.W. Phinney and L.G. Phinney). The complete notes on file at ASNH: “A. C. Borrer first noticed this gull by its much larger size. It appeared to be an adult Glaucous with 7–10 primaries

half to totally black; wing tips showed more white than a Herring Gull; mantle was pale gray. Head was 'cleaner' than winter Herring Gull. Black on primaries showed on under side of wing. Bill was larger than normal Herring, all yellow with dark tip. Iris was pale yellow. At one time it came as near as 35–40 feet from the boat. Followed us up river for over a mile. D. W. Finch noted that this is the first record for New England; there is one specimen from New Jersey. D. W. Finch had previously seen this type of gull in Iceland."

One was found at Laconia 31 Dec 1972 (D.J. Abbott, D.W. Finch) where it was studied in direct comparison with Great Black-backed, Herring, and Ring-billed Gulls. One was seen at the Rochester wastewater treatment plant 31 Jan 2002 (S.R. Mirick, R.A. Quinn) and possibly the same bird was found there 7 Feb 2002 (S.R. Mirick). One was found at Rochester 29 Dec 2003 (S.R. Mirick, L. Bevier), and 1 was at Odiorne State Park, Rye, 12 Sep 2009 (J. Trimble, S.R. Mirick).

Herring Gull x Lesser Black-backed Gull *Larus argentatus* x *Larus fuscus*

An adult male Lesser Black-backed Gull mated with a female Herring Gull at Appledore Island, ME, in summer 2007 and raised 1 hybrid chick which was banded and later identified the following winter in Florida. It spent some time in the New Hampshire Isles of Shoals. Presumably a different hybrid bird was found at Rochester 16 Dec 2008 (B. Griffith), and such a hybrid was also found at Odiorne Point, Rye, 12 Sep 2009 (J. Trimble, S.R. Mirick).

Great Skua *Stercorarius skua*

Presumably an occasional visitor to offshore waters such as Jeffreys Ledge and around the Isles of Shoals, principally as a southbound migrant in fall and northbound in early spring. Two known fall reports, neither of which have sufficiently detailed descriptions to be included on the hypothetical list. Two near Jeffreys Ledge 7 Oct 1978 (E.W. Phinney, S.A. Fogleman, P.A. Phipps *et al.*) and 1 seen from shore resting on the ocean near Rye Ledge 29 Nov 1978 (S.A. Fogleman, P.A. Phipps). There are 1 or more accepted records for this species for ME (ME-BRC website). Regular visitor to MA waters (Veitand and Petersen 1993).

South Polar Skua *Stercorarius maccormicki*

Presumably an occasional visitor to offshore waters such as Jeffreys Ledge and the Isles of Shoals as a northbound migrant in spring and southbound migrant in fall. Two known fall records, neither of which have sufficient details to be included on the hypothetical list. One at sea near Jeffreys Ledge 24 Sep 1978 (K.C. Elkins, E.W. Phinney, S.A. Fogleman *et al.*) and 1 seen on "New Scantum" 17 Sep 1983 (D.J. Abbott, R.S. Ridgely), the latter of which may not have been in New Hampshire waters. There is at least 1 accepted record for this species in Maine waters (ME-BRC website). Regular visitor to MA waters (Veitand and Petersen 1993).

African Collared-Dove *Streptopelia risoria*

Presumed escapes from captivity. One appeared in Milford 15 Aug 1978 and remained until 21 Nov (R.W. Lawrence, H.W. Parker), and 1 was in Center Harbor in Jul 1981 (R. Kelly) (photo February 1982 *NH Audubon* 18 [1]: 2). Single birds were found at Boscawen 20 Aug 1992 (B. Warren) and Whitefield 14 Sep 1992 (Z. Bradley, J.C. McIlwaine), and 2 were at Northwood 5 Nov 1992 (M. Witham and S. Witham).

Budgerigar *Melopsittacus undulatus*

Escapes. One at Manchester 14 Sep through Nov 1981 (M.T. Martin). One at Andover 24 Aug 1994 (A. Meier).

Nanday (Black-hooded) Parakeet *Nandayus nenday*

A presumed escape was present at the Whiteface Intervale, North Sandwich, through parts of Jul and most of Aug 1982 (B.S. Ridgely *et al.*). Photograph in *NH Audubon Newsletter*, November–December issue, 18 (5): 13. There are now significant feral populations in both Florida and California (Pranty and Garrett 2011).

Monk Parakeet *Myiopsitta monachus*

One appeared at a feeding station in Goffstown 30 May 1972 and remained through 31 Jul (H.W. Parker *et mult.*). It was photographed by both L. C. Rising and R. W. Lawrence; copies are on file at ASNH. It could

have been a locally-escaped cagebird or a vagrant from the feral population in the New York City area and adjacent Connecticut and New Jersey, which had been expanding since first recorded in 1968 (Bull 1971, 1974). By 2002 a few small colonies had been established in southern MA and northern Rhode Island.

One appeared in New Castle 24 Dec 1974 (*fide* D.J. Abbott) but was only seen that day. One survived sub-freezing temperatures in Pittsfield 4 Feb to 7 Apr 1991 (G.C. and A.E. Robbins), then was seen briefly in Epsom before disappearing. Birds that could represent strays or pioneers from the MA population were a pair at Pelham in early Apr 2002, up to 3 there in Aug 2002, and 1 there 6 Jan 2003 (J. Szafran).

Parakeet sp. *Aratinga* sp.

Escape. A bird thought possibly to be Red-masked Parakeet *A. erythrogenys* was seen and videotaped at New Durham 5 Jul 2005 (C.J. Martin, J. Philipppy).

Red-cockaded Woodpecker *Picoides borealis*

A report of this non-migratory southern species visiting a feeding station at Epsom on April 9 of an unnamed year given by Goodhue (1922) and published in the *Manchester Union* newspaper is very improbable at best. The bird seen may have been a juvenile female of one of the Hairy Woodpecker forms from the Canadian Maritime provinces, which would be about the right size and have a barred back and side streaking like *P. borealis*.

Mountain Bluebird *Sialia currucoides*

Vagrant from the west. One report which was never verified and for which adequate details have not survived came from West Campton 14 May 1984 (N. Hill *fide* P.A. Phipps) and 3 miles downhill from that spot 4 Jun 1984 (K. Hoyt *fide* P.A. Phipps) (NHBR 3 [1 and 2]: 8, January 1985). There are at least 2 MA records (Veit and Petersen 1993).

Sprague's Pipit *Anthus spragueii*

A published report from Durham 18 Mar 1962 with an editor's note of "good description, but not verified by any authority." The lack of convincing data, the rarity of this species in New England, and the unusual date all indicate that the report should be not be considered hypothetical. Two accepted records for MA (Veit and Petersen 1993) and listed as hypothetical for ME (ME-BRC website).

Smith's Longspur *Calcarius pictus*

Report of a bird seen at Hanover on the highly unlikely date of 22 Jul 1915 (C. Stewart) is without any details, convincing or otherwise. One accepted record for MA (Veit and Petersen 1993), a hypothetical record in VT (C.C. Rimmer pers. comm.), and at least 1 record for Maine (ME-BRC website).

Golden-winged x Blue-winged Warbler Hybrids *Vermivora chrysoptera* x *Vermivora cyanoptera*

Status. Rare visitors which are expected to decline. See Donsker (2003) for a detailed discussion of how these hybrids are produced and in what ratios. Also see Gill (1980) for historical aspects of hybridization between these 2 species.

"Brewster's" Warbler, the dominant hybrid type: One collected at Concord 20 May 1936 (White 1937) was sent to BSNH but can no longer be found. The *Atlas of Breeding Birds* project 1981–1986 found 1 probable and 3 possible breeding sites in the southeastern quadrant of the state (Foss 1994). Donsker (2003) reports 22 of this form in the 38 years 1955–1993 and 21 in the 10-year 1994–2003 period, showing a significant per-year increase which has paralleled the increase in Blue-winged Warblers. As the numbers of Golden-winged Warblers continue to decline, the numbers of hybrids can also be expected to drop. Six more records 2004–2009. Earliest spring arrivals are singles at Durham 30 Apr 2009 (K. Dorsey), at Kensington 13 May 1982 (R.S. Aaronian), and Hampton 14 May 1983 (E.W. Phinney). Latest reported is 1 at Dunbarton 30 Jun 1992 (J. Rosenthal).

"Lawrence's" Warbler, the recessive hybrid type: The *Atlas of Breeding Birds* project 1981–1986 found 3 possible breeding sites in the southeastern coastal plain (Foss 1994), 1 of which was in Rochester Jun 1982. A Lawrence's Warbler paired with a typical Blue-winged Warbler was found at Kensington in Jun and Jul 1972 (Hebert 1972). Donsker (2003) reports 7 in 38 years from 1955–1993 and 6 in 10 years 1994–2003. At least

12 more birds found 2003–2009. Earliest known in spring is 1 at Durham 2 May 2009 (K. Dorsey) and latest is 3 birds at Nashua 17 Jun 2009 (C. Sheridan).

Lined Seedeater *Sporophila lineola*

Though given by Jackson (1936) in error as in New Hampshire, this bird was collected 8 Aug 1935 on Smuttynose Island, ME, in the Isles of Shoals by Wright (1937). Also mentioned by Jackson (1947) and Palmer (1949). As suggested by the latter, probably an escaped cagebird. A long-distance migrant, it occurs in northern South America in the austral winter. Specimen #330449 at MCZ.

Saffron Finch *Sicalis flaveola*

One found at Bristol 1 Jan 1972 to 28 Feb 1973 is thought to have succumbed to winter weather as reported in NHAQ 26 (2): 55. Presumably an escaped cagebird; the nearest it occurs naturally is northern Venezuela; introduced to Puerto Rico.

Red-crested (Brazilian) Cardinal *Paroaria coronata*

Escapes from an unknown source; native to South America. Individuals were found at Hopkinton, New Durham, and Goffstown in Aug 1984. They gravitated to feeders for the winter and were present at Hopkinton 7 Mar 1985, at Dunbarton until late May 1985, at Weare until 29 Apr 1985, and at Goffstown until 30 Apr 1985.

Rose-breasted Grosbeak x Black-headed Grosbeak Hybrid *Pheucticus ludovicianus* x *Pheucticus melanocephalus*

One reported at Walpole 5 Jun 2008 without details (*fide* NHBR editor).

Brewer's Blackbird *Euphagus cyanocephalus*

Possible vagrant from the west. Several reports over the years including 1 from Littleton in the fall of 1988 (H.C. McDade) without details and 1 thought to be an adult male at Concord from mid-Dec 1971 to 5 Mar 1972 (R.W. Smart, D.W. Finch, D.J. Abbott *et al.*). The latter record is now thought most likely to have been a Rusty Blackbird by those that saw it. A scattering of 10 or more records in MA 1973–1980 (Veit and Petersen 1993) and 1 or more reports from Maine (ME-BRC website).

Boat-tailed/Great-tailed Grackle *Quiscalus major/mexicanus*

One reported on the 1970–1971 CBC and included in the National Audubon Society CBC database; no details or other documentation available.

Black-cowled Oriole (?) *Icterus prothemelas*

A bird closely fitting the description of a juvenile of this species was at Meredith 28 Mar 1964 (Sheen). See note in *Birding* 3: 157 about a record of this species in Nova Scotia in May 1971.

Bullock's Oriole x Baltimore Oriole Hybrid *Icterus bullockii* x *Icterus galbula*

One photographed at Kensington in Aug 2004; its plumage appeared to be primarily that of a young male Baltimore Oriole with some Bullock's characteristics.

Eurasian Siskin *Spinus spinus*

One caught in a banding trap in nearby Kittery, ME, 24 Mar 1962, was kept in captivity at UNH in Durham (A.C. Borrer). There are at least 2 accepted records for wild birds in MA as well as St. Pierre Island, Canada, and New Jersey, though the New Jersey bird was accepted only as being of uncertain provenance. A specimen of an adult female Pine Siskin at AMNH (#815934) collected at Sugar Hill (J. Pitocchelli) was originally mislabeled as this species.

Common Waxbill *Estrilda astrild*

Probable escaped cagebird; native to Africa. One found 28 Aug to 15 Sep 1965 (R.W. Smart, V.H. Hebert, R.W. Lawrence) at Rye and Hampton.

II: Museum Specimens of Birds Collected in New Hampshire

The following is a list of the 4843 known specimens of birds collected in New Hampshire, representing 258 species. These specimens have been located in 34 institutions which are part of the ORNIS database. An additional 4 collections were located which were found to have specimens from the state, and this information has been included in the list below. These additional collections are the Boston Museum of Science, Dartmouth College, the Peabody Essex Museum, and St. Anselm's College.

We also know that the University of New Hampshire at Durham (UNH) has a collection of bird specimens, quite a few of which were taken in the state. The collection consists of a mounted series in glass-fronted cases along a classroom building corridor and of study skins stored in an unused storage room. Unfortunately, the collection in the storage room is in disarray and there is no catalogue of what specimens the university possesses, whether taken in New Hampshire or elsewhere. Robert W. Smart made a list of 152 specimens of New Hampshire birds in the UNH collection in the early 1970s and recorded the specimen numbers of 18 historically important ones. However, it appears that some of the specimen labels have since been removed. Thus, though the specimens may still be there, the individual skins cannot be identified with certainty. In a few cases we have included the UNH specimen number in the text of the species accounts when we had that information. This situation cries out for competent curatorial attention, or the collection should be donated to another facility where it will be properly cared for instead of being left to deteriorate further.

It should be understood that the total for Western Foundation for Vertebrate Zoology includes a significant number of egg sets for the species indicated as well as study skins. The totals for Museum of Comparative Zoology, American Museum of Natural History, and Natural History Museum of Los Angeles County include significant numbers of skeleton specimens and tissue specimens as well as study skins. No bird sound recordings are included.

In addition, there are a few other locations where NH specimens are housed that are not included in the following list but which are mentioned in the species accounts. One such is the mounted Eurasian Wigeon on display at the Anchorage, Alaska, airport. The location of 14 Passenger Pigeon specimens lacking data are listed at the end of that species account. Lastly, the Acworth-Silsby Free Public Library has about 400 mounted specimens, almost all of which were taken in NH by 1892 (see Keith 1974). This collection was known to Glover Allen when he was writing his book on the state (1903) and appears to still be in good condition today. Virtually uniquely among private collections from this era, nearly every specimen bears a tag with the date and place where the bird was taken, making this collection extremely important historically and scientifically. Unfortunately there is no catalogue. Creating one would be a very worthwhile project for the library trustees or other interested party.

A few of the abbreviations for collections holding New Hampshire specimens are included in the list appearing at the end of the Introduction to this book since they are used in the main body of the text. Those abbreviations are repeated here in addition to those for the other collections listed in the table below.

Museum collections known to hold specimens of birds or eggs taken in New Hampshire:

	Number of Specimens
AMNH – American Museum of Natural History, New York, NY	584
ANSP – Academy of Natural Sciences, Philadelphia, PA	89
BMS – Boston Museum of Science, Boston, MA	138
CAS – California Academy of Science, San Francisco, CA	32
CM – Carnegie Museum of Natural History, Pittsburgh, PA	151
CMN – Canadian Museum of Nature, Ottawa, Ontario, Canada	30
CU – Cornell University Museum of Vertebrates, Ithaca, NY	65
DART – Dartmouth College, Hanover, NH	133

DMNS – Denver Museum of Natural History, Denver, CO	5
FMNH – Field Museum of Natural History, Chicago, IL	127
HSU – Humboldt State University, Arcata, CA	4
ISU – Illinois State University, Normal, IL	1
KU – University of Kansas Biodiversity Institute, Lawrence, KS	36
LSUMZ – Louisiana State University Museum of Zoology, Baton Rouge, LA	28
MCZ – Museum of Comparative Zoology, Harvard University, Cambridge, MA	1975
MSB – Museum of Southwestern Biology, Albuquerque, NM	7
MSU – Michigan State University, East Lansing, MI	2
MVZ – Museum of Vertebrate Zoology, University of California, Berkeley, CA	34
NHMLAC – Natural History Museum of Los Angeles County, Los Angeles, CA	14
OMNH – Sam Noble Oklahoma Museum of Natural History, Norman, OK	6
PEM – Peabody Essex Museum, Salem, MA	7
PSM – Slater Museum of Natural History, University of Puget Sound, Tacoma, WA	18
ROM – Royal Ontario Museum, Toronto, Ontario, Canada	8
SBNH – Santa Barbara Museum of Natural History, Santa Barbara, CA	9
SDNHM – San Diego Natural History Museum, San Diego, CA	1
STAN – St. Anselm’s College, Manchester, NH	58
UAM – University of Alaska Museum, Fairbanks, AK	1
UAZ – University of Arizona Museum of Natural History, Tucson, AZ	1
UBCBBM – University of British Columbia Beaty Biodiversity Museum, Vancouver, B.C., Canada	1
UCLA – University of California at Los Angeles, Los Angeles, CA	20
UCM – University of Colorado Museum of Natural History, Boulder, CO	2
UMMZ – University of Michigan Museum of Zoology, Ann Arbor, MI	27
UNSM – University of Nebraska State Museum, Lincoln, NE	13
USNM – U. S. National Museum (Smithsonian Institution), Washington, DC	206
UWBM – University of Washington Burke Museum, Seattle, WA	14
WFVZ – Western Foundation of Vertebrate Zoology, Camarillo, CA	175
YPM – Peabody Museum, Yale University, New Haven, CT	818
Total number of specimens:	4843

Snow Goose MCZ (1)
 Brant UNSM (1)
 Canada Goose AMNH (1) USNM (3) WFVZ (1) YPM (2)
 Wood Duck MCZ (6) YPM (6)
 Eurasian Wigeon MCZ (1)
 American Wigeon YPM (1)
 American Black Duck FMNH (1) MCZ (3) OMNH (1) YPM (4)
 Mallard AMNH (1)
 Blue-winged Teal MCZ (4) YPM (5)
 Northern Shoveler MCZ (1)

Green-winged Teal FMNH (1) MCZ (1) YPM (3)
 Ring-necked Duck MCZ (1) YPM (3)
 Greater Scaup YPM (2)
 Lesser Scaup MCZ (1) YPM (1)
 Common Eider AMNH (1)
 Harlequin Duck MCZ (1)
 Surf Scoter USNM (3) YPM (3)
 White-winged Scoter CMN (1) UNSM (1) USNM (3) YPM (7)
 Black Scoter MCZ (2) USNM (1)
 Long-tailed Duck MCZ (1) UNSM (1) USNM (2) YPM (1)
 Bufflehead YPM (5)
 Common Goldeneye MCZ (1) USNM (1) YPM (3)
 Hooded Merganser MCZ (1) USNM (1) YPM (6)
 Common Merganser AMNH (2) YPM (7)
 Red-breasted Merganser CU (1) YPM (1)
 Ruddy Duck AMNH (1) MCZ (2) YPM (1)
 Northern Bobwhite CMN (1) MCZ (1)
 Ring-necked Pheasant AMNH (3) YPM (2)
 Ruffed Grouse AMNH (18) ANSP (1) CAS (5) CM (1) CU (1) DMNS (2) FMNH (1) LSUMZ (2) MCZ (41)
 MSB (3) PSM (3) UCD (1) UBCBBM (1) UNSM (1) USNM (14) UWBM (4) WFVZ (4) YPM (27)
 Spruce Grouse FMNH (1) ISU (1) MCZ (3)
 Wild Turkey AMNH (3) NHMLAC (3)
 Red-throated Loon USNM (1) YPM (1)
 Common Loon AMNH (29) FMNH (3) MCZ (11) MSB (2) WFVZ (2) YPM (4)
 Pied-billed Grebe AMNH (1) MCZ (3) YPM (2)
 Horned Grebe UNSM (1)
 Red-necked Grebe MCZ (3) YPM (1)
 Black-capped Petrel MCZ (1)
 Double-crested Cormorant CMN (2) YPM (2)
 Great Cormorant MCZ (1) UWBM (1)
 Brown Pelican BMS (1) MCZ (1)
 American Bittern FMNH (1) MCZ (3) YPM (1)
 Great Blue Heron AMNH (2) MCZ (1) YPM (4)
 Great Egret USNM (1) YPM (2)
 Green Heron MCZ (5) USNM (1) YPM (2)
 Black-crowned Night-Heron AMNH (1) MCZ (1) YPM (1)
 Turkey Vulture USNM (1)
 Osprey AMNH (1) MCZ (4) UNSM (1) YPM (4)
 Bald Eagle MCZ (1) YPM (2)
 Northern Harrier ANSP (1) MCZ (5) MVZ (1) YPM (3)
 Sharp-shinned Hawk AMNH (5) ANSP (1) CAS (1) CM (1) CMN (1) LSUMZ (3) MCZ (28) USNM (1) YPM
 (2)
 Cooper's Hawk AMNH (4) MCZ (2) MVZ (1) ROM (1) YPM (2)
 Northern Goshawk MCZ (7) MVZ (1) USNM (1)
 Red-shouldered Hawk AMNH (3) MCZ (3)
 Broad-winged Hawk AMNH (5) ANSP (1) CMN (4) CU (2) FMNH (4) HSU (1) MCZ (7) MVZ (1) SBNH (1)
 UCD (1) USNM (3) WFVZ (21) YPM (3)
 Red-tailed Hawk AMNH (1) MCZ (4) YPM (4)
 Rough-legged Hawk YPM (2)
 American Kestrel AMNH (2) CMN (1) MCZ (2) WFVZ (1) YPM (3)
 Merlin MCZ (2) UMMZ (1) YPM (4)

Peregrine Falcon PSM (4) WFVZ (60) YPM (2)
 Yellow Rail AMNH (1)
 Virginia Rail MCZ (2) YPM (1)
 Sora MCZ (1) USNM (1) YPM (3)
 Purple Swampphen MCZ (1)
 Common Gallinule MCZ (3)
 American Coot MCZ (1) YPM (3)
 Black-bellied Plover CM (2) MCZ (5) UMMZ (1) YPM (1)
 American Golden-Plover CM (1) FMNH (1) MCZ (7) YPM (1)
 Semipalmated Plover AMNH (1) CM (1) MCZ (5) MVZ (2) UCM (1) YPM (2)
 Piping Plover MCZ (4) WFVZ (4) YPM (2)
 Killdeer YPM (2)
 Spotted Sandpiper AMNH (4) MCZ (6) YPM (1)
 Solitary Sandpiper AMNH (2) FMNH (1) MCZ (5) UCLA (1) YPM (4)
 Greater Yellowlegs CM (4) MCZ (10) NHMLAC (1) YPM (2)
 Willet FMNH (1) MCZ (5) MSU (1) YPM (2)
 Lesser Yellowlegs CM (6) FMNH (1) MCZ (9) SDNHM (1) YPM (2)
 Upland Sandpiper AMNH (1) MCZ (6)
 Whimbrel DMNS (1) FMNH (1) MCZ (5) UCLA (1) UMMZ (1) YPM (1)
 Hudsonian Godwit CM (2) CMN (1) MCZ (4) YPM (2)
 Marbled Godwit MCZ (1)
 Ruddy Turnstone CM (1) MCZ (6) USNM (1) YPM (2)
 Red Knot CM (4) MCZ (6) YPM (2)
 Sanderling FMNH (1) MCZ (5) UMMZ (1) YPM (2)
 Semipalmated Sandpiper MCZ (13) UCLA (2) UMMZ (1)
 Least Sandpiper CM (1) MCZ (13) MVZ (1) YPM (2)
 White-rumped Sandpiper AMNH (1) CM (1) MCZ (7)
 Baird's Sandpiper MCZ (3)
 Pectoral Sandpiper CM (1) FMNH (1) MCZ (4) NHMLAC (2) YPM (2)
 Purple Sandpiper YPM (4)
 Stilt Sandpiper AMNH (1) CAS (2) CM (2) CU (1) MCZ (15) UCLA (1) UMMZ (2)
 Buff-breasted Sandpiper FMNH (1) MCZ (1)
 Ruff MCZ (1)
 Short-billed Dowitcher CM (5) KU (2) MCZ (11) UCLA (2) UMMZ (1) YPM (2)
 Long-billed Dowitcher MCZ (2)
 Wilson's Snipe AMNH (1) CM (1) CMN (2) YPM (2)
 American Woodcock AMNH (2) CAS (2) LSUMZ (1) MCZ (7) MSU (1) UNSM (1) YPM (9)
 Wilson's Phalarope MCZ (3)
 Red-necked Phalarope MCZ (1) UMMZ (1)
 Black-legged Kittiwake MCZ (2) USNM (1)
 Bonaparte's Gull AMNH (1) MCZ (1) UCM (1) YPM (2)
 Laughing Gull YPM (2)
 Herring Gull CU (4) MCZ (1) YPM (2)
 Great Black-backed Gull MCZ (1) YPM (1)
 Sooty Tern MCZ (1)
 Black Tern MCZ (2)
 Roseate Tern FMNH (1) MCZ (2)
 Common Tern CU (1) MCZ (13)
 Arctic Tern MCZ (3) YPM (3)
 Forster's Tern MCZ (1)
 Dovekie CU (1) KU (1) UNSM (1) YPM (2)

Thick-billed Murre MCZ (3) USNM (2)
 Razorbill FMNH (1) MCZ (1)
 Rock Pigeon YPM (2)
 Mourning Dove CAS (1) LSUMZ (1) YPM (6)
 Passenger Pigeon FMNH (2) MCZ (3)
 Yellow-billed Cuckoo MCZ (2)
 Black-billed Cuckoo AMNH (11) ANSP (1) CU (1) LSUMZ (1) MCZ (7) UCLA (1) UMMZ (1) YPM (4)
 Eastern Screech-Owl MCZ (2) USNM (1) YPM (1)
 Great Horned Owl MCZ (3) YPM (4)
 Snowy Owl ANSP (1) MCZ (1) YPM (1)
 Northern Hawk Owl MCZ (2)
 Barred Owl AMNH (27) MCZ (4) UCLA (1) USNM (2) YPM (8)
 Great Gray Owl FMNH (1)
 Long-eared Owl MCZ (2) YPM (1)
 Short-eared Owl CM (1) MCZ (2) YPM (2)
 Boreal Owl AMNH (1) MCZ (1)
 Northern Saw-whet Owl AMNH (4) DMNS (2) MCZ (4) UNSM (1) YPM (4)
 Common Nighthawk AMNH (3) MCZ (4) MSB (1) USNM (3) YPM (5)
 Eastern Whip-poor-will AMNH (1) CU (1) MCZ (2)
 Chimney Swift AMNH (2) MCZ (6) UMMZ (1) USNM (1) YPM (4)
 Ruby-throated Hummingbird ANSP (8) CAS (2) MCZ (7) MVZ (1) YPM (12)
 Belted Kingfisher AMNH (6) CU (1) LSUMZ (1) MCZ (7) USNM (1) YPM (3)
 Yellow-bellied Sapsucker AMNH (4) ANSP (2) CAS (2) CMN (2) FMNH (1) MCZ (32) NHMLAC (2) UCLA
 (1) UMMZ (1) USNM (5) UWBM (1) YPM (8)
 Downy Woodpecker AMNH (9) ANSP (1) CM (3) CMN (1) MCZ (22) USNM (5) YPM (2)
 Hairy Woodpecker AMNH (7) CM (1) FMNH (1) KU (1) MCZ (28) UCLA (1) USNM (5) YPM (4)
 American Three-toed Woodpecker AMNH (1) MCZ (11)
 Black-backed Woodpecker AMNH (9) FMNH (1) MCZ (5) WFVZ (1)
 Northern Flicker AMNH (5) ANSP (1) MCZ (9) UCLA (1) USNM (3) YPM (7)
 Pileated Woodpecker MCZ (8) MVZ (1) USNM (1)
 Olive-sided Flycatcher AMNH (1) CMN (2) FMNH (2) MCZ (10) USNM (1) WFVZ (2) YPM (1)
 Eastern Wood-Pewee AMNH (2) ANSP (2) CM (1) MCZ (9) USNM (1) YPM (1)
 Yellow-bellied Flycatcher ANSP (1) FMNH (1) MCZ (22) USNM (1) WFVZ (1) YPM (1)
 Alder Flycatcher AMNH (1) FMNH (3) MCZ (6) USNM (4)
 Least Flycatcher AMNH (4) ANSP (2) CAS (1) CM (1) CU (1) MCZ (13) USNM (1) WFVZ (1) YPM (1)
 Eastern Phoebe AMNH (3) CM (8) UMMZ (1) USNM (1) YPM (2)
 Great Crested Flycatcher AMNH (1) CM (2) MCZ (5) USNM (2) YPM (1)
 Eastern Kingbird AMNH (2) ANSP (2) CAS (1) MCZ (3) USNM (2) WFVZ (1) YPM (6)
 Loggerhead Shrike FMNH (1)
 Northern Shrike AMNH (1) MCZ (3) YPM (5)
 Bell's Vireo MCZ (1)
 Yellow-throated Vireo AMNH (2) MCZ (1)
 Blue-headed Vireo AMNH (4) CM (1) MCZ (3) MVZ (1) UCLA (1) USNM (3) WFVZ (2) YPM (2)
 Warbling Vireo AMNH (3) LSUMZ (1)
 Philadelphia Vireo MCZ (9)
 Red-eyed Vireo AMNH (7) ANSP (2) CM (13) FMNH (2) KU (1) MCZ (24) NHMLAC (1) USNM (2) YPM
 (8)
 Gray Jay AMNH (1) KU (1) USNM (1) YPM (1)
 Blue Jay AMNH (7) ANSP (1) HSU (1) LSUMZ (1) MCZ (11) USNM (2) YPM (3)
 American Crow AMNH (3) FMNH (7) MCZ (2) USNM (2) WFVZ (1) YPM (5)
 Horned Lark CMN (2) FMNH (1) MCZ (1) MVZ (1) YPM (4)

Purple Martin AMNH (1) MCZ (8) PSM (1)
 Tree Swallow AMNH (1) CAS (1) MCZ (29) USNM (1) YPM (2)
 Bank Swallow MCZ (9) WFVZ (1) YPM (1)
 Cliff Swallow MCZ (15) USNM (1) WFVZ (1) YPM (2)
 Barn Swallow AMNH (4) ANSP (1) CAS (1) CMN (1) LSUMZ (1) MCZ (13) WFVZ (1) YPM (3)
 Black-capped Chickadee AMNH (1) CAS (4) CM (12) CU (1) MCZ (30) MSB (1) UMMZ (1) USNM (10)
 WFVZ (4) YPM (11)
 Boreal Chickadee AMNH (4) ANSP (2) LSUMZ (1) MCZ (20) ROM (1) USNM (1) WFVZ (1)
 Tufted Titmouse AMNH (1) MCZ (1)
 Red-breasted Nuthatch AMNH (1) ANSP (5) CAS (1) CU (1) FMNH (1) MCZ (64) SBNH (1) USNM (3)
 WFVZ (6) YPM (2)
 White-breasted Nuthatch CMN (1) MCZ (14) YPM (5)
 Brown Creeper MCZ (12) USNM (2)
 Carolina Wren MCZ (1)
 Bewick's Wren MCZ (1)
 House Wren YPM (2)
 Winter Wren AMNH (4) ANSP (2) CAS (1) CMN (1) FMNH (1) MCZ (15) MVZ (1) USNM (1) WFVZ (2)
 YPM (1)
 Sedge Wren MCZ (6)
 Golden-crowned Kinglet AMNH (2) MCZ (12) MVZ (1) OMNH (1) YPM (2)
 Ruby-crowned Kinglet AMNH (3) MVZ (1) USNM (1)
 Eastern Bluebird AMNH (4) ANSP (1) CAS (2) CU (1) MCZ (14) WFVZ (2) YPM (2)
 Veery AMNH (15) ANSP (1) CM (3) FMNH (4) LSUMZ (1) MCZ (10) NHMLAC (1) SBNH (1) UWBM (1)
 WFVZ (3) YPM (7)
 Gray-cheeked Thrush CU (1) MCZ (2)
 Bicknell's Thrush AMNH (11) ANSP (2) MCZ (14) YPM (1)
 Swainson's Thrush AMNH (1) ANSP (4) CU (2) FMNH (5) MCZ (27) UMMZ (1) USNM (2) WFVZ (8) YPM
 (6)
 Hermit Thrush CM (1) CU (1) FMNH (1) MCZ (33) OMNH (1) PSM (1) SBNH (1) UCLA (1) USNM (2)
 WFVZ (6) YPM (7)
 Wood Thrush CAS (1) CM (1) MCZ (3) YPM (16)
 American Robin AMNH (12) CAS (1) CM (3) FMNH (1) MCZ (9) ROM (2) USNM (1) YPM (24)
 Gray Catbird AMNH (4) CM (3) KU (1) LSUMZ (1) USNM (2) YPM (4)
 Brown Thrasher AMNH (3) CMN (1) MCZ (1) YPM (2)
 European Starling LSUMZ (1) MCZ (1) YPM (15)
 American Pipit MCZ (8)
 Cedar Waxwing AMNH (6) ANSP (4) CMN (1) KU (5) LSUMZ (1) MCZ (21) MVZ (1) USNM (2) WFVZ (1)
 YPM (30)
 Lapland Longspur MCZ (2)
 Snow Bunting YPM (6)
 Ovenbird AMNH (6) ANSP (1) CAS (1) CM (9) CMN (1) FMNH (2) MCZ (17) PSM (1) SBNH (1) USNM
 (2) YPM (18)
 Louisiana Waterthrush CM (4)
 Northern Waterthrush AMNH (1) CM (2) KU (1) MCZ (7) SBNH (1) USNM (2)
 Black-and-white Warbler AMNH (7) ANSP (3) CM (6) MCZ (30) NHMLAC (1) USNM (1) YPM (3)
 Prothonotary Warbler YPM (1)
 Tennessee Warbler AMNH (1) MCZ (3)
 Orange-crowned Warbler AMNH (1) MCZ (1)
 Nashville Warbler AMNH (11) ANSP (1) FMNH (2) MCZ (13) OMNH (1) PSM (1) USNM (8) WFVZ (10)
 YPM (3)
 Connecticut Warbler MCZ (3) UMMZ (1)

Mourning Warbler ANSP (1) CAS (1) MCZ (3) OMNH (1) USNM (3)
 Common Yellowthroat AMNH (11) ANSP (1) CM (1) FMNH (1) KU (2) LSUMZ (3) MCZ (14) UMMZ (2)
 UNSM (1) USNM (4) YPM (9)
 American Redstart AMNH (6) ANSP (2) CM (9) FMNH (1) KU (1) LSUMZ (1) MCZ (25) NHMLAC (1)
 UNSM (1) USNM (2) YPM (3)
 Cape May Warbler ANSP (2) CU (1)
 Northern Parula AMNH (8) MCZ (10)
 Magnolia Warbler AMNH (8) ANSP (1) CM (1) FMNH (12) KU (1) LSUMZ (1) MCZ (15) MSU (1) PSM (3)
 ROM (1) SBNH (1) USNM (12) UWBM (2) YPM (2)
 Bay-breasted Warbler AMNH (3) FMNH (1) MCZ (43) PSM (1) YPM (1)
 Blackburnian Warbler AMNH (13) ANSP (2) FMNH (9) KU (1) MCZ (46) MVZ (2) USNM (4) YPM (2)
 Yellow Warbler AMNH (5) CM (1) MCZ (1) YPM (8)
 Chestnut-sided Warbler AMNH (8) ANSP (3) CM (1) KU (5) LSUMZ (1) MCZ (25) NHMLAC (1) UMMZ
 (1) UNSM (1) USNM (2) WFVZ (4) YPM (3)
 Blackpoll Warbler AMNH (9) FMNH (1) MCZ (33) UMMZ (1) USNM (4) YPM (3)
 Black-throated Blue Warbler AMNH (4) ANSP (2) CU (1) FMNH (3) LSUMZ (1) MCZ (28) MVZ (1) USNM
 (2) YPM (3)
 Palm Warbler AMNH (3) MCZ (14) USNM (1)
 Pine Warbler AMNH (14) ANSP (1) MCZ (10) MVZ (1) UMMZ (1) USNM (3)
 Yellow-rumped Warbler AMNH (11) CMN (1) FMNH (2) KU (1) MCZ (39) UMMZ (1) UNSM (1) USNM
 (2) YPM (12)
 Prairie Warbler AMNH (3) MCZ (1)
 Black-throated Green Warbler AMNH (9) ANSP (1) FMNH (1) MCZ (42) MVZ (1) UMMZ (1) USNM (4)
 UWBM (1) YPM (4)
 Canada Warbler AMNH (6) ANSP (2) LSUMZ (1) MCZ (16) PSM (2) UCLA (1) USNM (2) YPM (8)
 Wilson's Warbler AMNH (2) MCZ (10) UMMZ (1) YPM (2)
 Eastern Towhee FMNH (1) MCZ (6) UCLA (1) YPM (2)
 American Tree Sparrow AMNH (2) MCZ (12) YPM (4)
 Chipping Sparrow AMNH (2) ANSP (1) MCZ (25) MVZ (1) YPM (14)
 Field Sparrow AMNH (5) MCZ (8) USNM (1) YPM (7)
 Vesper Sparrow AMNH (4) KU (1) MCZ (24) YPM (2)
 Savannah Sparrow AMNH (2) CM (11) MCZ (35) YPM (1)
 Grasshopper Sparrow AMNH (4) MCZ (4)
 Henslow's Sparrow CU (1) MCZ (6)
 Nelson's Sparrow YPM (1)
 Saltmarsh Sparrow MCZ (8) MVZ (3)
 Seaside Sparrow ROM (1)
 Fox Sparrow AMNH (3) CMN (1) HSU (1) MCZ (17) UCLA (1) YPM (5)
 Song Sparrow AMNH (8) ANSP (1) KU (1) LSUMZ (1) MCZ (1) USNM (1) WFVZ (3) YPM (6)
 Lincoln's Sparrow AMNH (1) CU (1) MCZ (1)
 Swamp Sparrow CM (1) MCZ (15) USNM (1) WFVZ (1) YPM (1)
 White-throated Sparrow AMNH (7) ANSP (1) FMNH (6) KU (4) MCZ (22) MVZ (1) OMNH (1) PSM (1)
 SBNH (1) UCD (1) USNM (1) WFVZ (9) YPM (16)
 White-crowned Sparrow ANSP (1) MCZ (5) YPM (2)
 Dark-eyed Junco AMNH (4) ANSP (2) CAS (1) CM (1) CU (1) FMNH (2) KU (1) MCZ (31) MVZ (2) ROM
 (1) SBNH (1) USNM (2) WFVZ (3) YPM (14)
 Scarlet Tanager AMNH (1) ANSP (1) KU (2) MCZ (9) NHMLAC (1) ROM (1) USNM (2) YPM (7)
 Rose-breasted Grosbeak AMNH (2) ANSP (1) CMN (1) KU (2) MCZ (11) UCLA (1) USNM (1) YPM (7)
 Blue Grosbeak MCZ (1)
 Indigo Bunting AMNH (7) ANSP (1) MCZ (13) USNM (1) YPM (3)
 Bobolink AMNH (2) CU (1) MCZ (14) USNM (1) YPM (4)

Red-winged Blackbird AMNH (3) CMN (1) MCZ (13) USNM (1) YPM (5)
 Eastern Meadowlark CM (1) MCZ (2) USNM (1) YPM (2)
 Rusty Blackbird AMNH (4) CU (1) MCZ (2) UMMZ (1) USNM (1) YPM (1)
 Common Grackle AMNH (6) FMNH (5) MCZ (5) UCLA (1) WFVZ (1) YPM (3)
 Brown-headed Cowbird AMNH (2) MCZ (8) USNM (2) WFVZ (3) YPM (5)
 Baltimore Oriole AMNH (3) MCZ (3) UWBM (2) YPM (5)
 Pine Grosbeak AMNH (12) ANSP (2) CM (2) CU (10) FMNH (4) KU (1) MCZ (25) MVZ (2) UMMZ (2)
 USNM (7) YPM (1)
 Purple Finch AMNH (3) ANSP (4) CU (17) MCZ (28) YPM (58)
 Red Crossbill AMNH (5) ANSP (1) CU (2) LSUMZ (1) MCZ (6) YPM (4)
 White-winged Crossbill AMNH (1) ANSP (1) CM (5) CU (1) FMNH (16) MCZ (9) MVZ (3) YPM (9)
 Common Redpoll ANSP (15) MCZ (37) MVZ (2) UWBM (1) YPM (26)
 Pine Siskin AMNH (5) ANSP (3) CU (5) MCZ (11) SBNH (1) UAM (1) USNM (1) YPM (8)
 American Goldfinch AMNH (6) ANSP (2) CM (7) CU (1) MCZ (27) YPM (14)
 Evening Grosbeak CMN (1) LSUMZ (1) MCZ (9) YPM (13)
 House Sparrow MCZ (1) USNM (1) YPM (3)

III: Summary of Banded Bird Recoveries in New Hampshire

Here we summarize the 17,522 recoveries of bands reported to the U. S. Geological Survey Bird Banding Laboratory from 1955 through January 2011, either of birds banded in New Hampshire or banded elsewhere and recovered in New Hampshire. It needs to be mentioned that there were many band return reports prior to 1955 stretching back into the 1920s, but they have yet to be computerized, and at this point probably never will be. Included in the Appendix are records for 149 species and 1 hybrid duck. In most cases the results are unsurprising and the data do not warrant particular comment. However, there are a few observations that can be made.

Several species either went long distances or came from long distances: (1) Herring Gulls banded in New Hampshire reached the Bahamas, Mexico, and Panama; (2) Common Terns reached Brazil and the Lesser Antilles; (3) an Arctic Tern reached Brazil; (4) 2 Redheads came from western Canada; (5) Greater Scaup came from Alaska and Yukon Territory; (6) a Bufflehead came from the Northwest Territories; (7) Snow Geese came from Nunavut and Baffin Island, Northwest Territories; (8) a Brant came from Nunavut; (9) a Peregrine Falcon went to Mexico; (10) a Black-and-white Warbler reached Jamaica; and (11) a Gray Catbird returned from Cuba.

Several species dispersed very widely either to or from New Hampshire: (1) Herring Gulls reached or came from 30 states and Canadian provinces and 3 foreign countries other than Canada; (2) Mallards reached or came from 38 states and Canadian provinces as far west as Montana, as far southwest as Mississippi, and as far south as Alabama; (3) American Black Ducks reached or came from 24 states and Canadian provinces as far south as Georgia and South Carolina and as far southwest as Tennessee; (4) Blue-winged Teal came from Manitoba and Saskatchewan; (5) Canada Geese reached or came from 28 states, Canadian provinces, and St. Pierre and Miquelon, as far south as North Carolina and as far west as Washington and California; (6) Evening Grosbeaks reached or came from 33 states, Canadian provinces, and St. Pierre and Miquelon, as far south as Alabama and as far west as Manitoba; (7) Purple Finches reached or came from 29 states, Canadian provinces, and the District of Columbia, as far south as Alabama, as far southwest as Texas, and as far west as Wisconsin; (8) a Common Redpoll banded in New Hampshire was recovered in Alaska; (9) a Pine Siskin banded in New Hampshire was recovered in California; (10) a Tree Swallow banded in Wisconsin reached New Hampshire; (11) a Bank Swallow banded in New Hampshire was recovered in Colorado; and (12) a Magnolia Warbler banded in New Hampshire was recovered in Wisconsin.

Several species were shown to be rather sedentary: (1) virtually all Hairy and Downy Woodpeckers banded in New Hampshire were recovered there; (2) all White-breasted Nuthatches and all Red-breasted Nuthatches banded in New Hampshire were recovered there; and (3) of 924 Black-capped Chickadees banded or recovered in New Hampshire, only 8 came from or went outside of New England, though those 8 included birds banded as far away as Maryland and Ohio.

The only band recovery that qualifies as a vagrant species is that of a Brown Pelican originally banded in Maryland and recovered in Newington at Great Bay National Wildlife Refuge. There are only two other records of this species for the state.

While there have been a total of 120 persons licensed to band New Hampshire birds since the Bird Banding Laboratory has been keeping records, only 43 are resident in the state today, and many of those are inactive. When banding first became a popular thing to do in the 1920s and 1930s, several people took up the hobby with enthusiasm: K. C. Harding in Holderness, J. P. Melzer in Milford, M. J. Magee in Hanover, L. O. Shelley in East Westmoreland, F. B. White in Concord, and H. G. and C. L. Whittle in Peterborough. In the 1940s and 1950s, other active banders included R. L. Weaver in Hanover, Dr. J. H. Kennard in Manchester, I. F. Hunt in Monroe, and B. M. and M. S. Shaub who focused on Evening Grosbeaks in northern New Hampshire. Banders active in the 1960s and 1970s included Dr. H. C. McDade in Littleton, J. C. McIlwaine in Littleton, and G. C. Robbins in Pittsfield. More recently, active banders have included J. P. Merrill in Center Harbor, and especially R. W. Suomala who has done more banding work on the New Hampshire Isles of Shoals than anyone else.

However, while the above workers focused primarily on passerines in their local areas, since 2002 the largest increases in recoveries both within and from outside the state have been from programs focused on individual species or groups of species. For example, through 2002, recoveries of Canada Geese constituted 12.6% of the

total of 12,501 recoveries up until that time, and the collective total of Mallards, American Black Ducks, and Wood Ducks constituted 24.3% of all recoveries until then. By 2011 in contrast, Canada Goose recoveries had risen to a total of 25.6% of the total of 17,522 recoveries and the collective total of the same three species of ducks had dropped slightly to 23.1% of all recoveries. Thus 4 species of waterfowl up to now have constituted nearly half, or 48.7%, of all recoveries ever known for the state. This illustrates the effect of NHFG efforts to band many more waterfowl than in previous years as well as the relative decline in banding of passerines, for example. It should also be mentioned that the vast majority of band returns known for Bald Eagles, Peregrine Falcons, and Common and Roseate Terns have been since 2002 as programs encouraging those species have been successful and, in the case of the two former species, they have recovered from the widespread effects of pesticide poisoning—see the accounts for all four species. Conversely, the number of Herring Gulls being banded both in the state and elsewhere must have dropped off sharply; by 2002 there were 990 recoveries both in New Hampshire and from sites outside the state, but only another 10 were recorded since!

In summary, our general understanding of the distribution of birds breeding in New Hampshire and passing through as migrants has been broadened as a result of the banding data though it does relatively little to elucidate the changing patterns of abundance or geographical status over time.

For those interested in learning more about the history of bird banding and its contributions to population monitoring, population ecology, avian ecotoxicology, international and domestic bird conservation, behavioral research, and investigation of avian diseases, we recommend Jackson, Davis, and Tautin (2008).

AOU # Species

- 7 Common Loon: 2 birds recovered in NH were banded in MA. Six birds banded in NH were recovered in NH (2), MA (3), ME (1).
- 13 Atlantic Puffin: 1 bird recovered in NH 8/19/80 was banded in ME only 8 days earlier.
- 47 Great Black-backed Gull: 22 birds recovered in NH were banded in ME (21) and New Brunswick (1). Three birds banded in NH were recovered in MA (2), Nova Scotia (1: 3 years later).
- 51 Herring Gull: 88 birds recovered in NH banded in ME (45), MA (15), NY (1), RI (2), MI (2), WI (1), New Brunswick (7), Newfoundland (2), Ontario (7), Quebec (6). Four hundred fifty-one birds banded in NH were recovered in RI (10), NH (76), ME (29), MA (89), Nova Scotia (3), AL (13), LA (23), MS (8), DE (6), TX (12), NJ (28), NY (61), FL (22), at sea (2), CT (8), IA (1), NC (8), SC (6), GA (6), Ontario (2), New Brunswick (1), Bahama Islands (1), Mexico (2), VA (18), Quebec (2), Panama (1), WV (2), Newfoundland (2), PEI (1), MD (7), Labrador (1).
- 54 Ring-billed Gull: 9 birds recovered in NH banded in NY (5), Ontario (4).
- 58 Laughing Gull: 1 bird recovered in NH was banded in MA.
- 65 Royal Tern: 1 bird recovered in NH on 8/21/91 was banded in NC (#78481689) only 44 days earlier.
- 69 Forster's Tern: 1 bird recovered in NH on 7/20/68 was banded in MD (#96327655) only 52 days earlier.
- 70 Common Tern: 64 birds recovered in NH banded in CT (1), ME (29), MA (16), NY (16), VT (1), Brazil (1). Eight banded in NH were recovered in MA (3), NH (3), ME (1), Lesser Antilles (1: #587911 banded 6/25/30, recovered 4/?/31).
- 71 Arctic Tern: 2 birds banded in NH were recovered in ME (1), Brazil (1: #60312716, banded 7/3/57, recovered 3/2/60).
- 72 Roseate Tern: 3 birds recovered in NH banded in ME (1), MA (2).
- 117 Northern Gannet: 1 bird recovered in NH banded in Quebec.
- 126 Brown Pelican: 1 bird recovered in NH was banded in MD.
- 119 Great Cormorant: 1 bird recovered in NH banded in PEI.
- 120 Double-crested Cormorant: 7 birds recovered in NH were banded in ME (5), MA (1), New Brunswick (1).

- 129 Common Merganser: 1 bird recovered in NH was banded in New Brunswick.
- 131 Hooded Merganser: 2 birds recovered in NH banded in ME (2). Twenty banded in NH were recovered in NH (14), VA (1), NC (1), NJ (1), Quebec (1), NY (1), CT (1).
- 132 Mallard: 312 birds recovered in NH were banded in CT (2), DE (2), ME (15), MD (6), MA (109), NJ (3), NY (33), NC (6), PA (5), RI (1), VT (10), VA (1), MI (2), MN (3), OH (1), TN (1), WI (1), MT (1), Alberta (3), Brit. Columbia (1), Manitoba (3), New Brunswick (23), Newfoundland (1), Nova Scotia (2), Ontario (18), PEI (1), Quebec (58). One thousand ten birds banded in NH were recovered in NH (737), ME (45), MA (48), NC (4), NJ (7), Quebec (53), VT (17), NY (25), DE (5), ID (1), RI (5), MD (9), MO (2), WI (2), Nova Scotia (1), TN (3), MS (2), KY (2), IL (3), MI (4), CT (8), unknown (4), PA (2), Ontario (10), VA (4), OH (1), MN (1), PEI (1), ND (2), Newfoundland (1), AL (1).
- 132.6 Mallard X Black Duck Hybrid: 8 birds recovered in NH were banded in MA (5), NY (1), New Brunswick (1), Quebec (1). Seventeen birds banded in NH were recovered in NH (7), NJ (1), VA (1), MA (4), Quebec (2), ME (1), MD (1).
- 133 American Black Duck: 759 birds recovered in NH were banded in CT (6), DE (8), ME (102), MD (9), MA (331), NJ (24), NY (53), NC (9), PA (5), RI (5), VT (46), VA (40), TN (1), New Brunswick (43), Newfoundland (8), Nova Scotia (17), Ontario (5), PEI (1), Quebec (46). Five hundred fifty-seven birds banded in NH were recovered in NH (189), NJ (57), Quebec (28), MD (28), CT (12), ME (59), MA (65), NY (42), KY (1), RI (12), PA (2), DE (11), VA (12), VT (11), NC (4), SC (2), Ontario (6), New Brunswick (5), Nova Scotia (5), Newfoundland (4), PEI (2).
- 135 Gadwall: 1 bird recovered in NH was banded in MA.
- 137 American Wigeon: 4 birds recovered in NH were banded in New Brunswick (1), Nova Scotia (1), PEI (2).
- 139 American Green-winged Teal: 38 birds recovered in NH were banded in GA (1), ME (1), MA (4), NY (1), NC (4), SC (1), New Brunswick (5), Newfoundland (4), Nova Scotia (1), Ontario (1), Quebec (15). Four birds banded in NH were recovered in MI (1), MD (1), TX (1), NJ (1).
- 140 Blue-winged Teal: 22 birds recovered in NH were banded in MA (4), RI (1), MI (1), Manitoba (4), New Brunswick (5), Ontario (4), PEI (1), Saskatchewan (2). Two birds banded in NH were recovered in ME (1), NJ (1).
- 143 Northern Pintail: 5 birds recovered in NH were banded in NY (1), New Brunswick (1), PEI (1), Quebec (2). Two birds banded in NH were recovered in Quebec (1), CT (1).
- 143.6 Hybrid Duck: 1 bird recovered in NH was banded in Quebec.
- 144 Wood Duck: Two hundred nine birds recovered in NH were banded in DE (4), FL (1), GA (5), ME (35), MD (21), MA (21), NJ (3), NY (12), NC (15), PA (2), SC (9), VT (20), VA (1), WV (1), AL (6), AR (1), IL (1), IA (2), KY (3), LA (5), MI (2), MS (3), OH (6), TN (5), WI (1), New Brunswick (10), Nova Scotia (4), Ontario (3), PEI (2), Quebec (5). Two hundred fifteen birds banded in NH were recovered in NH (85), SC (16), NJ (7), GA (13), NY (5), NC (19), MA (2), ME (6), Quebec (5), New Brunswick (2), FL (8), LA (3), PA (4), Ontario (4), VT (8), OH (1), DE (4), AR (1), IL (1), MD (4), MS (3), MN (1), VA (3), RI (1), AL (2), TN (3), CT (1), MI (1), unknown (2).
- 146 Redhead: 2 birds recovered in NH were banded in Alberta (1), Manitoba (1).
- 147 Canvasback: 1 bird recovered in NH was banded in VA.
- 148 Greater Scaup: 2 birds recovered in NH were banded in AK (1), Yukon Territory (1).
- 149 Lesser Scaup: 2 birds recovered in NH were banded in LA (1), WI (1).
- 150 Ring-necked Duck: 4 birds recovered in NH were banded in SC (1), New Brunswick (1), Nova Scotia (1), PEI (1).
- 151 Common Goldeneye: 1 bird recovered in NH was banded in ME.
- 152 Bufflehead: 1 bird recovered in NH was banded in MacKenzie District, NWT.
- 159 Common Eider: 1 bird recovered in NH was banded in ME.
- 169.9 Greater Snow Goose: 1 bird recovered in NH was banded in Nunavut.

- 172 Canada Goose: 261 birds recovered in NH were banded in CT (5), DE (8), ME (69), MD (16), MA (74), NJ (8), NY (21), NC (3), PA (3), RI (1), VT (3), VA (5), OH (2), WI (1), NE (1), New Brunswick (6), Newfoundland (2), Ontario (2), PEI (6), Quebec (25). One thousand three hundred eighteen birds banded in NH were recovered in NH (815), ME (46), MA (214), MD (8), Quebec (35), NC (5), VA (2), DE (2), CT (61), NY (54), RI (20), VT (14), unknown (5), TN (1), OH (6), NJ (12), PA (4), IL (1), PEI (5), CA (1), New Brunswick (3), MI (1), KY (1), Nova Scotia (1), St. Pierre & Miquelon (1).
- 173 Brant: 1 bird recovered in NH was banded in Nunavut.
- 126 Brown Pelican: 1 bird recovered in NH was banded in MD.
- 190 American Bittern: 1 bird recovered in NH was banded in NY.
- 194 Great Blue Heron: 1 bird recovered in NH was banded in ME.
- 196 Great Egret: 1 bird recovered in NH was banded in NY.
- 197 Snowy Egret: 1 bird recovered in NH was banded in MA.
- 202 Black-crowned Night Heron: 13 birds recovered in NH were all banded in MA.
- 221 American Coot: 1 bird recovered in NH was banded in NY.
- 228 American Woodcock: 45 birds recovered in NH were banded in ME (21), MA (5), NJ (2), NY (1), NC (3), VA (2), WV (1), IA (1), LA (8), New Brunswick (1). Nine birds banded in NH were recovered in NH (4), GA (1), NJ (2), VT (1), ME (1).
- 277 Piping Plover: 1 bird recovered in NH had been banded there 5 weeks earlier.
- 316 Mourning Dove: 9 birds recovered in NH were banded in MA (8), NY (1). Thirty-three birds banded in NH were recovered in NH (21), SC (1), MA (3), RI (2), DE (1), ME (1), VA (2), GA (1), Quebec (1).
- 331 Northern Harrier: 1 bird banded in NH was recovered in VA.
- 332 Sharp-shinned Hawk: 20 birds recovered in NH were banded in CT (1), MD (1), MA (1), NJ (10: 8 from Cape May), NC (1), PA (2), VA (4).
- 333 Cooper's Hawk: 14 birds recovered in NH were banded in CT (2), NJ (6 from Cape May), NY (1), PA (1), VA (4).
- 334 Northern Goshawk: 3 birds recovered in NH were banded in MA (1), NY (1), VT (1). Three birds banded in NH were recovered in NH (2), PA (1).
- 337 Red-tailed Hawk: 10 birds recovered in NH were banded in ME (1), MA (2), NJ (2), NY (1), PA (1), VT (3). Four banded in NH were recovered in NH (2), NJ (1), NY (1).
- 338 Red-shouldered Hawk: 1 bird recovered in NH was banded in MA. One bird banded in NH was recovered there.
- 343 Broad-winged Hawk: 1 bird recovered in NH was banded in MA. Five birds banded in NH were recovered in NH (3), NC (1), FL (1).
- 347 Rough-legged Hawk: 1 bird banded in NH was recovered in ME.
- 352 Bald Eagle: 10 birds recovered in NH were banded in MA (8), NY (1), VT (1). Five birds banded in NH were recovered in NH (1), NY (4).
- 356 Peregrine Falcon: 18 birds recovered in NH were banded in CT (2), ME (4), NY (5), VT (6), Quebec (1). Forty-eight birds banded in NH were recovered in NH (16), Saskatchewan (1), NY (4), FL (1), VT (16), Mexico (1), NJ (1), VA (1), CT (3), SC (1), PA (1), MA (2).
- 357 Merlin: 2 birds recovered in NH were banded in ME (1), VA (1).
- 360 American Kestrel: 22 birds recovered in NH were banded in CT (1), FL (3), MD (2), MA (8), NJ (8: 6 from Cape May). Eighteen birds banded in NH were recovered in NH (5), MD (1), NC (2), NJ (5), CT (1), VT (2), NY (1), MA (1).
- 364 Osprey: 5 birds recovered in NH were banded in NH (2), MD (1), MA (1), NY (1).
- 365 Barn Owl: 1 bird banded in NH was recovered in CT.

- 368 Barred Owl: 4 birds recovered in NH were banded in MA (1), NH (2), VT (1).
- 372 Northern Saw-whet Owl: 4 birds recovered in NH were banded in NH (1), Ontario (2), Quebec (1).
- 375 Great Horned Owl: 6 birds recovered in NH were banded in MA (4), NH (2). One bird banded in NH was recovered in Quebec.
- 376 Snowy Owl: 1 bird banded in NH was recovered in Quebec.
- 390 Belted Kingfisher: 1 bird banded in NH was recovered in NJ.
- 393 Hairy Woodpecker: 21 birds banded in NH were recovered in NH (20), MA (1).
- 394 Downy Woodpecker: 42 birds banded in NH were all recovered in NH.
- 402 Yellow-bellied Sapsucker: 1 bird banded in NH was recovered in NC.
- 412 Northern Flicker: 1 bird recovered in NH was banded in MA. Four birds banded in NH were recovered in NH (2), FL (1), SC (1).
- 423 Chimney Swift: 18 birds recovered in NH were banded in GA (4), PA (1), VA (1), AL (1), LA (2), MS (1), TN (8). Nine birds banded in NH were recovered in NH (4), VA (1), KY (1), GA (1), ME (2).
- 428 Ruby-throated Hummingbird: 2 birds recovered in NH were banded in NH (1), AL (1).
- 444 Eastern Kingbird: 1 bird banded in NH was recovered there.
- 452 Great Crested Flycatcher: 2 birds recovered in NH were banded in NH (1), MA (1).
- 456 Eastern Phoebe: 1 bird recovered in NH was banded in PA. Ten birds banded in NH were recovered in NH (7), AL (1), SC (1), NY (1).
- 467 Least Flycatcher: all 4 birds recovered in NH were banded there.
- 477 Blue Jay: 45 birds recovered in NH were banded in CT (10), ME (1), MD (8), MA (8), NJ (6), NY (4), PA (5), VT (1), VA (2). One hundred eighty-three birds banded in NH were recovered in NH (168), New Brunswick (2), SC (3), MA (1), VA (1), PA (1), Nova Scotia (1), ME (3), NC (2), CT (1).
- 484 Gray Jay: 1 bird banded in NH was recovered there 3.5 years later.
- 493 European Starling: 48 birds recovered in NH were banded in CT (1), MD (4), MA (6), NJ (23), PA (6), RI (2), VT (1), AL (1), OH (4). Twenty-six birds banded in NH were recovered in NH (17), RI (1), CT (1), MA (3), ME (2), NY (1), VT (1).
- 494 Bobolink: 1 bird recovered in NH was banded in NY.
- 495 Brown-headed Cowbird: 59 birds recovered in NH were banded in CT (2), DE (17), FL (1), ME (7), MA (5), NJ (12), NY (3), PA (5), RI (2), VT (4), VA (1). One hundred three birds banded in NH were recovered in NH (65), MA (3), SC (1), DE (8), ME (8), NJ (5), Quebec (1), New Brunswick (1), NC (3), PA (2), NY (2), GA (1), FL (1), VA (1), CT (1).
- 498 Red-winged Blackbird: 6 birds recovered in NH were banded in CT (2), ME (1), MA (2), Quebec (1). Eleven birds banded in NH were recovered in NH (6), VT (1), NC (1), FL (1), MA (1), MD (1).
- 501 Eastern Meadowlark: 1 bird recovered in NH was banded in NJ.
- 507 Northern Oriole: 4 birds recovered in NH were banded in MD (1), MA (1), NH (1), NJ (1).
- 511 Common Grackle: 21 birds recovered in NH were banded in CT (1), ME (1), MD (1), MA (5), NJ (3), NY (4), PA (3), RI (1), VT (2). Thirty-five birds banded in NH were recovered in NH (26), CT (2), ME (1), NJ (1), MD (1), VA (1), PA (1), NC (1), MA (1).
- 514 Evening Grosbeak: 488 birds recovered in NH were banded in CT (1), GA (1), ME (73), MD (7), MA (140), NJ (10), NY (78), NC (3), PA (72), RI (7), SC (2), VT (37), VA (13), WV (3), AL (2), MI (8), OH (1), TN (1), WI (2), TX (1), Newfoundland (1), Nova Scotia (2), Ontario (14), Quebec (9). Eight hundred seventy-one birds banded in NH were recovered in NH (219), Quebec (68), MI (17), NJ (12), ME (59), New Brunswick (47), WI (7), MA (93), NY (78), PA (82), Ontario (46), SC (2), Nova Scotia (20), NC (10), VT (26), MD (15), CT (37), WV (5), VA (15), RI (4), MN (1), PEI (1), AR (1), St. Pierre & Miquelon (1), AL (2) OH (1), Manitoba (1), IL (1).
- 515 Pine Grosbeak: 1 bird banded in NH was recovered in VT.

- 517 Purple Finch: 121 birds recovered in NH were banded in CT (13), District of Columbia (3), ME (22), MD (4), MA (37), NJ (10), NY (4), NC (4), PA (9), VT (5), VA (5), AL (2), MI (1), TN (1), Manitoba (1). One thousand five hundred ninety birds banded in NH were recovered in NH (1469), TX (4), MS (4), PA (5), AL (5), MA (29), ME (11), Quebec (4), NC (4), TN (3), VT (9), CT (12), SC (4), LA (4), GA (3), NJ (3), NY (3), Nova Scotia (1), Ontario (2), VA (3), IA (1), District of Columbia (1), MD (2), IA (1), RI (2), WI (1).
- 519 House Finch: 7 birds recovered in NH were banded in CT (1), MD (1), MA (1), PA (1), SC (1), VT (1), VA (1). Three birds banded in NH were recovered in NJ (2), NH (1).
- 528 Common Redpoll: 1 bird recovered in NH was banded in Quebec. Eleven birds banded in NH were recovered in NH (5), VT (2), Quebec (3), AK (1).
- 529 American Goldfinch: 15 birds recovered in NH were banded in CT (2), GA (1), MA (5), NY (1), PA (3), VT (1), NJ (2). Sixty-nine birds banded in NH were recovered in NH (50), SC (1), ME (2), MA (5), Quebec (3), CT (1), PA (6), OH (1).
- 533 Pine Siskin: 23 birds recovered in NH were banded in CT (3), MD (1), MA (8), NJ (3), NY (3), PA (2), VT (2), Ontario (1). Seven birds banded in NH were recovered in NH (2), MA (3), VT (1), CA (1).
- 534 Snow Bunting: 2 birds banded in NH were recovered in Quebec.
- 540 Vesper Sparrow: 1 bird recovered in NH was banded in MA. Seven birds banded in NH were all recovered in NH.
- 554 White-crowned Sparrow: 1 bird recovered in NH was banded in MO. Two birds banded in NH were recovered in TX (1), Quebec (1).
- 558 White-throated Sparrow: 20 birds recovered in NH were banded in CT (1), ME (2), MD (3), MA (4), NJ (4), NY (2), NC (1), PA (1), VT (1), AL (1). Thirty-eight birds banded in NH were recovered in NH (27), NC (2), MS (1), SC (1), MA (1), LA (1), ME (1), CT (1), DE (1), MD (1), NY (1).
- 559 American Tree Sparrow: 25 birds recovered in NH were banded in CT (5), ME (1), MA (5), NJ (2), NY (2), VT (10). Five hundred thirty-nine birds banded in NH were recovered in NH (521), CT (5), MA (5), NY (3), ME (4), Quebec (1).
- 560 Chipping Sparrow: 355 birds banded in NH were recovered in NH (351), MA (2), SC (1), GA (1).
- 563 Field Sparrow: 1 bird recovered in NH was banded in NJ. Three birds banded in NH were all recovered in NH.
- 567 Dark-eyed Junco: 18 birds recovered in NH were banded in CT (2), ME (1), MD (1), MA (2), NJ (4), NY (1), NC (1), PA (2), RI (1), VA (1), IL (1), Quebec (1). Forty-three birds banded in NH were recovered in NH (26), SC (6), New Brunswick (1), ME (2), AL (1), MD (1), NY (1), SC (1), MA (2), VA (1), NJ (1).
- 581 Song Sparrow: 14 birds recovered in NH were banded in MA (4), NJ (4), NY (2), VT (2), WI (2). Four hundred thirty birds banded in NH were recovered in NH (415), MA (3), SC (4), ME (1), NC (3), NJ (1), Quebec (1), GA (1), VA (1).
- 582 Lincoln's Sparrow: 1 bird recovered in NH was banded in OH. One bird banded in NH was recovered there.
- 584 Swamp Sparrow: 1 birds recovered in NH was banded there. One bird banded in NH was recovered in CT.
- 585 Fox Sparrow: 1 bird recovered in NH was banded in New Brunswick. Five birds banded in NH were recovered in NC (1), NY (1), Newfoundland (2), Quebec (1).
- 587 Eastern Towhee: 3 birds recovered in NH were banded in CT (1), District of Columbia (1), PA (1). Twenty-eight birds banded in NH were recovered in NH (27), PA (1).
- 593 Northern Cardinal: 1 bird banded in NJ was recovered in NH.
- 595 Rose-breasted Grosbeak: 1 bird recovered in NH was banded in NY. Fifty birds banded in NH were recovered in NH (48), GA (1), PA (1).
- 598 Indigo Bunting: 3 birds recovered in NH were banded in NY (1), NH (2).

- 608 Scarlet Tanager: 2 birds banded in NH were both recovered there about 1 year later.
- 611 Purple Martin: 1 bird recovered in NH was banded in Quebec about 2 years earlier.
- 612 Cliff Swallow: 1 bird recovered in NH was banded there about 1 year earlier.
- 613 Barn Swallow: 2 birds recovered in NH were banded in MA (1), VT (1). Sixteen birds banded in NH were all recovered there, one 5.9 years later.
- 614 Tree Swallow: 3 birds recovered in NH were banded in MA (2), WI (1). Fifty-two birds banded in NH were recovered in NH (51), MA (1).
- 616 Bank Swallow: 4 birds banded in NH were recovered in NH (3), CO (1).
- 619 Cedar Waxwing: 3 birds recovered in NH were banded in MA (1), NY (1), RI (1). Three birds banded in NH were all recovered there.
- 621 Northern Shrike: 3 birds banded in NH were all recovered there after short times.
- 624 Red-eyed Vireo: 1 bird recovered in NH was banded in VT. Two birds banded in NH were recovered there.
- 636 Black-and-White Warbler: 8 birds banded in NH were recovered in NH (5), New Brunswick (1), SC (1), Jamaica (1).
- 650 Cape May Warbler: 1 bird banded in NH was recovered in MA.
- 652 Yellow Warbler: 2 birds recovered in NH were banded in ME (1), NH (1).
- 654 Black-throated Blue Warbler: 2 birds recovered in NH were banded in WV.
- 655 Yellow-rumped Warbler: 1 bird recovered in NH was banded in VA. Three birds banded in NH were recovered in FL (1), NY (1), RI (1).
- 657 Magnolia Warbler: 1 bird recovered in NH was banded in MA. One bird banded in NH was recovered in MI.
- 659 Chestnut-sided Warbler: 1 bird recovered in NH was banded in VT. Four birds banded in NH were all recovered there, one 3.9 years later.
- 661 Blackpoll Warbler: 1 bird recovered in NH was banded in ME.
- 662 Blackburnian Warbler: 1 bird banded in NH was recovered there 1 year later.
- 667 Black-throated Green Warbler: 1 bird banded in NH was recovered in GA 4.5 years later.
- 674 Ovenbird: 2 birds recovered in NH were banded in MD (1), WV (1). Five birds banded in NH were all recovered there, 1 about 2 years later.
- 681 Common Yellowthroat: 8 birds recovered in NH were banded in GA (1), ME (2), NJ (3), VA (2).
- 687 American Redstart: 2 birds recovered in NH were banded in ME (1), VA (1). Seven birds banded in NH were all recovered there.
- 688.2 House Sparrow: 1 bird banded in NH was recovered there.
- 697 American Pipit: 1 bird banded in NH was recovered there 4 years later.
- 703 Northern Mockingbird: 1 bird recovered in NH was banded in NY 2 months earlier.
- 704 Gray Catbird: 5 birds recovered in NH were banded in ME (1), MA (1), NJ (2), Quebec (1). Fifty-three birds banded in NH were recovered in NH (48), NC (1), PA (1), MA (1), Nova Scotia (1), RI (1).
- 705 Brown Thrasher: 4 birds recovered in NH were banded in MD (1), NJ (3). One bird banded in NH was recovered there about 2 years later.
- 718 Carolina Wren: 1 bird recovered in NH was banded in MA about 1.5 months earlier.
- 726 Brown Creeper: 7 birds banded in NH were all recovered there, one 4.3 years later.
- 727 White-breasted Nuthatch: 1 bird recovered in NH was banded in MN. Sixty birds banded in NH were all recovered there, one after 5.3 years.
- 728 Red-breasted Nuthatch: 16 birds banded in NH were all recovered there, 2 after about 2.9 years.

- 735 Black-capped Chickadee: 57 birds recovered in NH were banded in CT (1), ME (1), MD (1), MA (47), NJ (1), NY (3), PA (2), OH (1). Eight hundred sixty-seven birds banded in NH were recovered in NH (865), VT (1), MA (1).
- 755 Wood Thrush: 4 birds recovered in NH were banded in NH (2), NJ (1), NY (1).
- 756 Veery: 4 birds recovered in NH were banded in MD (1 after 4.8 years), NJ (1), PA (1), VT (1). Twenty-six birds banded in NH were all recovered there, 1 after 3.9 years.
- 758 Swainson's Thrush: 3 birds recovered in NH were banded in NJ (1), NH (2: one after 3 years). One bird banded in NH was recovered in FL.
- 759 Hermit Thrush: 4 birds recovered in NH were banded in MD (1), NH (2), NY (1).
- 760 American Robin: 7 birds recovered in NH were banded in CT (2), FL (1), MA (1), NY (1), VT (1), VA (1). Thirty birds banded in NH were recovered in NH (24), NC (1), SC (2), NY (1), FL (1), GA (1).
- 766 Eastern Bluebird: 3 birds recovered in NH were banded in ME (1), MD (1), MA (1). Twenty-six birds banded in NH were recovered in NH (23), NC (1), VT (1), MA (1).

IV: Summary of Breeding Bird Survey Results

One hundred fifty species of birds have been reported on New Hampshire Breeding Bird Surveys (BBS) since 1966 in high enough numbers to permit analysis of trends, but even for some of those the data are insufficient. The following table has been extracted from the USGS Breeding Bird Survey Summary and Analysis web site www.mbr-pwrc.usgs.gov/bbs/reglist09.html. The table lists these 150 species and 7 columns of numbers. The first (leftmost) column includes only the numbers 1 to 3; these are the Credibility Measures prepared by the USGS Breeding Bird Survey office. Category 1 reflects data with deficiencies due to regional abundance of 0.1 birds per route, fewer than 5 routes over the long term, or so imprecise that a 5% per year change would not be detected over the long term. Category 2 reflects data with deficiencies due to regional abundance of less than 1.0 birds per route, less than 14 routes over the long term, or so imprecise that a 3% per year change would not be detected over the long term. Category 3 reflects data with at least 14 samples long term, moderate precision, and moderate abundance on routes. Those wishing more precise definitions of the credibility codes should consult www.mbr-pwrc.usgs.gov/cgi-bin/atlasa09.pl?NH&2&09.

The second column provides the population trend as measured only on BBS routes done in New Hampshire from 1966 through 2009 expressed as an annual percentage change. The third column lists the 95% confidence intervals for the trend values in the second column. The fourth column lists the population trend percentages on New Hampshire BBS routes for the period from 1999 through 2009 and the fifth column provides 95% confidence intervals for these values. The sixth column lists the population trend for these same 150 species in the Atlantic Northern Forest Bird Conservation Region, a region encompassing western New England and the Adirondack Mountains east to Cape Breton and the Gaspé Peninsula. This area includes all of New Hampshire except the southeastern portion, essentially the coastal plain south and east of Concord. The trend values in this column are for the period 1999 through 2009 to provide direct comparison with New Hampshire values for the same time period. The seventh and rightmost column lists the trend values for the same 150 species for the entire United States for the period 1999 through 2009, also allowing direct comparison with the data for New Hampshire and the Atlantic Northern Forest region.

Several interesting points can be drawn from this table of data. First, species one might have expected to be found on BBS surveys are missing from the list of 150: Bald Eagle, Merlin, Peregrine Falcon, Eastern Screech-Owl, Northern Saw-whet Owl, Red-bellied Woodpecker, and several other regular breeding species. While most of these species have been recorded on 1 or more New Hampshire BBS routes 1 or more times, there has not been enough data yet for the USGS to analyze. Looking at the 1999–2009 data for New Hampshire, only 48.0% are in category 3, the most credible category, and only 52.7% are in category 3 in the Atlantic Northern Forest data. Therefore, roughly half the species listed are covered adequately in New Hampshire (credibility score 3). The direction of the trends for about half the species is probably correct most of the time, but the size of the population change must be considered less reliable. In contrast, the credibility codes for the data for the entire United States is 94.7% in category 3, suggesting that it is nearly all statistically robust.

Fifty species are shown to be declining in all 4 columns of trend values, or 33.3% of the species. Sixteen species are shown declining in New Hampshire and the Atlantic Northern Forest but are increasing in the United States as a whole. Only 5 species (Northern Harrier, Downy Woodpecker, American Crow, Magnolia Warbler, and Prairie Warbler) are reported as increasing in New Hampshire and the Atlantic Northern Forest region but are apparently declining in the United States as a whole. Despite the trend values for Northern Harrier in New Hampshire which are in the lowest credibility code, data from field observers suggest that it is not really increasing in the state. It also appears uncertain that Magnolia Warbler is really increasing either since the confidence intervals for the 1999–2009 trend value are -2.2% to +2.6%. These examples indicate that considerable care needs to be taken with the New Hampshire values in the USGS tables.

Thirty-eight species of the 150 (25.3%) are shown as increasing in New Hampshire, the Atlantic Northern Forest region and in the United States as a whole. Keeping in mind the weakness of some of the data, 10 species have shown an average of at least a 5% growth trend in New Hampshire for both the 1966–2009 and 1999–2009 periods (Canada Goose, Hooded Merganser, Common Merganser, Wild Turkey, Osprey, Common Raven, Tufted Titmouse, Carolina Wren, Pine Warbler, and Northern Cardinal). Conversely, 23 species have shown an average

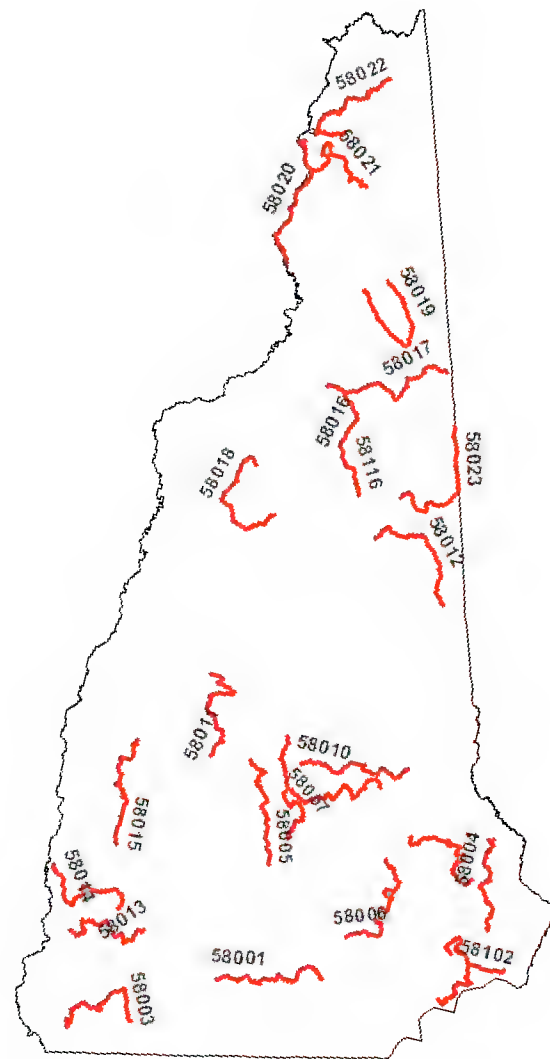
trend decline of at least 5% in the same 2 data sets (American Black Duck, Ring-necked Pheasant, Pied-billed Grebe, Common Nighthawk, Eastern Whip-poor-will, Olive-sided Flycatcher, Philadelphia Vireo, Bank Swallow, Cliff Swallow, Marsh Wren, Blue-gray Gnatcatcher, Brown Thrasher, Golden-winged Warbler, Cape May Warbler, Bay-breasted Warbler, Blackpoll Warbler, Canada Warbler, Eastern Towhee, Field Sparrow, Vesper Sparrow, Eastern Meadowlark, Rusty Blackbird, and Red Crossbill). In most cases, the inclusion of the above species in these 2 categories of increase and decline are based on non-significant confidence intervals or poor data to begin with but will also not come as a surprise to field observers who have been active in New Hampshire during the last decade.

Several points need to be strongly emphasized when looking at these data, especially when considering the New Hampshire series. The same routes have been done every year in the 1966–2009 period except for two substitutions of routes that were dropped; 960 routes out of a possible total of 986 (97%) have been the same since 1966. The number done in 1999–2009 has remained steady at either 22 or 23 routes per year, and the number run has averaged 22 for the entire 1966–2009 period. But if the routes have stayed the same, the habitat on those routes has not remained constant. Over a 10-year period, changes in habitat will affect the presence and abundance of some species. While the BBS is designed to detect population trends, it is not intended to shed light on the causes of those trends. Bird populations are influenced by habitat change anywhere in the annual cycle, predation, disease, insect outbreaks, and any number of other factors. The BBS is thus a tool that allows researchers to identify aspects of avian population ecology in need of further study.

Since 1966, the same people have not always done the counting, so differences in the field skills of observers can have an effect on the data when personnel change. Even differences in weather on the dates selected to do the surveys can make a difference in whether some species are detected. However, the effects of observer bias and weather are largely smoothed out over data sets as long as 40 years or more. The breeding localities of a few species (gulls, Double-crested Cormorant) are not covered by the current BBS routes; their inclusion is almost incidental to the overall process. Lastly, the area of New Hampshire covered by BBS routes is extremely small relative to the entire state, so population trends indicated by the BBS surveys may not precisely reflect population changes statewide, though such trends are certainly highly suggestive in many cases. See the map showing the location of New Hampshire's 2010 routes.

Given the nature of the BBS process, there are some biases that should be mentioned. BBS routes tend to capture relatively reliable data for territorial upland species with small home ranges and for grassland species; they are not as good at collecting data for groups such as raptors, colonially-nesting species, nocturnal species, and secretive marsh species (such as Marsh Wren, for example). Needless to say, migrants and winter visitors are not covered at all. Having said this, the BBS is a very valuable tool for monitoring the populations of New Hampshire birds for which it works well; as for the rest, it should be acknowledged that it is perhaps less helpful and has limitations but is still worth doing.

Significant help with this piece was received from Rebecca W. Suomala and Pamela D. Hunt of ASNH and Keith L. Pardieck and Jane Fallon of the BBS Office at USGS, Laurel, MD.



						Atl. No. Forest	All U. S.
	Credibility		Credibility		Credibility		
	Measure	1966-2009	Range 1966-2009	1999-2009	Range 1999-2009	1999-2009	1999-2009
Canada Goose	1	24.6	16.5 to (34.5)	9.9	(9.4) to 36.2	16.3	18.2
Wood Duck	2	3.4	0.0 to 6.6	0.8	(14.2) to 7.6	3.9	3
American Black Duck	2	-4.9	(7.6) to (2.0)	-5.1	(12.4) to 0.7	1.4	-2.3
Mallard	2	6.5	3.6 to 9.1	3.5	(6.5) to 10.0	11.7	0.5
Hooded Merganser	1	5.5	1.0 to 10.3	5.4	(8.5) to 15.3	9.8	10.9
Common Merganser	1	7.3	3.0 to 11.7	6.6	(6.8) to 15.0	2.4	2.3
Northern Bobwhite	1	5.4	(4.7) to 17.8	5.3	(24.4) to 46.2	-6.4	-3.6
Ring-necked Pheasant	1	-6.3	(10.9) to (1.2)	-5.6	(21.1) to 10.4	3.2	1.9
Ruffed Grouse	2	-4.5	(6.9) to (2.1)	-4.5	(10.6) to 0.1	-0.6	2.4
Wild Turkey	1	23.2	16.6 to 31.4	25.5	15.1 to 39.7	28.9	14.2
Common Loon	2	3.6	0.5 to 6.5	4.8	(5.1) to 13.1	1.3	1.5
Pied-billed Grebe	1	-5.3	(16.8) to 5.1	-5.5	(30.0) to 24.8	3.1	N.A.
Double-crested Cormorant	1	4.5	(5.3) to 19.5	1.7	(30.7) to 25.9	8.1	7.1
American Bittern	2	-2.3	(4.4) to (0.2)	-1.6	(6.2) to 2.5	0.9	-0.5
Great Blue Heron	2	0.8	(0.9) to 2.5	1.1	(3.8) to 4.7	0.4	2.5
Green Heron	2	-1.2	(3.5) to 1.3	-0.6	(5.2) to 7.0	-2.9	-1.3
Turkey Vulture	1	13.1	8.3 to 18.4	11.2	(4.4) to 18.6	8.3	3
Osprey	1	6.6	(1.6) to 16.7	6.6	(11.4) to 27.3	4.9	4.9
Northern Harrier	1	5.5	(1.6) to 14.6	6.1	(6.0) to 34.8	1.9	-0.4
Sharp-shinned Hawk	1	1.7	(2.4) to 5.9	1.7	(10.1) to 14.3	1.9	2.5
Cooper's Hawk	1	4.6	(1.2) to 11.6	4.7	(6.7) to 17.5	9.1	5.5
Northern Goshawk	1	0.1	(42.4) to 61.9	-97.7	(6.3) to 214.8	0.6	1.7
Red-shouldered Hawk	1	-3.4	(7.2) to 0.0	-6.2	(24.0) to 4.7	-1.6	4.2
Broad-winged Hawk	2	0.8	(0.7) to 2.4	0.9	(3.0) to 4.6	2.1	1.1
Red-tailed Hawk	1	3.2	(0.2) to 6.9	4.9	(5.5) to 14.5	1.7	2.3
American Kestrel	2	-3.8	(5.6) to (1.9)	-2.9	(8.0) to 4.1	-2.7	-1.3
Killdeer	3	-0.5	(2.2) to 1.3	-4.2	(9.6) to 1.4	-5.9	0
Spotted Sandpiper	2	-0.7	(2.9) to 1.5	-0.8	(4.8) to 3.0	-3.1	-0.2
Wilson's Snipe	2	-0.5	(2.5) to 1.6	-0.7	(4.4) to 3.2	-1	-0.6
American Woodcock	1	-0.6	(5.5) to 4.7	-0.7	(15.5) to 17.7	-0.7	-0.2
Herring Gull	2	-4.6	(8.3) to (0.9)	-5	(11.6) to 1.9	-4.7	-0.7
Great Black-backed Gull	1	-4.6	(11.1) to 2.9	-5	(21.8) to 14.2	-0.2	9.7
Rock Pigeon	3	-1.2	(3.8) to 0.9	-0.6	(6.1) to 3.3	2.8	-0.1
Mourning Dove	3	3.5	2.7 to 4.4	-0.8	(3.2) to 1.7	-0.1	0
Yellow-billed Cuckoo	1	-1.3	(5.1) to 2.5	-0.9	(13.5) to 13.5	4.3	-2.2
Black-billed Cuckoo	2	-2.6	(6.1) to 0.7	-3.3	(17.2) to 12.3	-4.8	-2
Great Horned Owl	1	0.2	(6.5) to 11.9	1.3	(11.7) to 58.1	-0.1	0.9
Barred Owl	1	0.5	(3.8) to 4.8	1.3	(12.9) to 17.2	1.6	2.8
Common Nighthawk	1	-9.1	(18.8) to (1.7)	-9.2	(35.4) to 21.8	-1	-0.9
Eastern Whip-poor-will	1	-6.8	(10.1) to (3.4)	-6	(12.7) to 1.2	0	-0.8
Chimney Swift	3	-3	(4.0) to (1.9)	-3.8	(6.7) to (1.0)	-4.7	-2
Ruby-throated Hummingbird	2	1.4	0.0 to 2.9	1.9	(1.2) to 7.1	3	2.2
Belted Kingfisher	2	-1.7	(3.0) to (0.3)	-1.7	(5.2) to 1.4	-0.7	-1.3
Yellow-bellied Sapsucker	3	1.8	0.4 to 3.2	2.5	(1.6) to 7.1	-0.2	3.1
Downy Woodpecker	3	1.6	0.8 to 2.5	1.6	(0.2) to 3.3	0.1	-0.1
Hairy Woodpecker	3	0.7	(0.2) to 1.8	0.8	(1.2) to 3.0	1.6	1.1
Northern Flicker	3	-3.6	(4.4) to (2.7)	-2.7	(5.0) to 0.5	-1.3	-1.6
Pileated Woodpecker	2	3.4	2.0 to 5.0	2.9	(1.2) to 6.0	3.6	1.8
Olive-sided Flycatcher	2	-7.1	(9.4) to (4.8)	-7	(11.2) to (2.2)	-3	-1.4
Eastern Wood-Pewee	3	-1.5	(2.3) to (0.7)	-1.6	(3.6) to 0.3	-2.7	-0.8
Yellow-bellied Flycatcher	2	-2.9	(5.8) to 0.0	-3.2	(10.0) to 1.5	-1	2.7

						Atl. No. Forest	All U. S.
	Credibility		Credibility		Credibility		
	Measure	1966-2009	Range 1966-2009	1999-2009	Range 1999-2009	1999-2009	1999-2009
Alder Flycatcher	3	1.9	0.9 to 2.9	1.9	(0.7) to 4.3	0.7	2.4
Willow Flycatcher	2	4.4	1.2 to 8.3	5.8	(1.2) to 15.1	5.7	0
Least Flycatcher	3	-4.8	(5.6) to (4.1)	-5	(6.9) to (3.3)	-3.1	-1.5
Eastern Phoebe	3	-0.4	(1.1) to 0.4	-3.5	(6.0) to (1.2)	-1.7	1
Great Crested Flycatcher	3	0.2	(0.7) to 1.1	0.1	(2.4) to 2.1	-1.1	0.5
Eastern Kingbird	3	-2.4	(3.1) to (1.7)	-2.5	(4.3) to (0.7)	-3.1	-0.8
Yellow-throated Vireo	2	1.9	(0.5) to 4.4	5.2	0.5 to 13.9	-1	1.9
Blue-headed Vireo	3	2.3	1.0 to 3.7	2.9	(0.7) to 7.1	4.1	3.4
Warbling Vireo	3	0.5	(0.6) to 1.8	0.2	(2.9) to 3.0	0.3	1.4
Philadelphia Vireo	1	-6.4	(11.6) to (1.0)	-6.6	(15.1) to 3.0	1.6	7.5
Red-eyed Vireo	3	0.6	0.1 to 1.1	1.6	0.0 to 3.3	1.6	0.9
Blue Jay	3	-1.3	(1.9) to (0.8)	-1.2	(2.8) to 0.4	-0.5	-1.2
American Crow	3	2	1.4 to 2.5	1.5	(0.1) to 2.7	0.9	-0.6
Common Raven	2	5.5	3.8 to 7.5	5.4	1.3 to 10.3	0.8	3.3
Purple Martin	1	1.5	(5.0) to 7.8	1.8	(15.8) to 21.7	-3.5	-0.1
Tree Swallow	3	-2.7	(3.6) to (1.8)	-2.8	(4.7) to (0.9)	-3.2	1.7
Northern Rough-winged							
Swallow	2	0.6	(2.8) to 3.8	0.2	(9.8) to 8.1	0.5	1.1
Bank Swallow	3	-8.2	(10.7) to (5.4)	-7.8	(13.1) to (1.3)	-11	1.6
Cliff Swallow	3	-8.4	(11.0) to (5.8)	-8.9	(14.5) to (4.9)	-4.5	4.7
Barn Swallow	3	-4.4	(5.0) to (3.7)	-4.7	(6.5) to (3.4)	-6.2	-0.4
Black-capped Chickadee	3	1.6	0.8 to 2.3	1.8	(0.3) to 4.0	1.8	0
Boreal Chickadee	1	-2	(6.8) to 3.4	-2.4	(19.3) to 14.9	1	3.4
Tufted Titmouse	2	12.1	9.7 to 14.4	4.6	0.5 to 8.8	11	1.4
Red-breasted Nuthatch	3	2.3	0.7 to 4.1	-1.7	(6.2) to 2.9	-3.3	2.4
White-breasted Nuthatch	3	2.5	1.4 to 3.6	2.1	(0.5) to 4.5	-0.1	2.1
Brown Creeper	2	0.7	(1.6) to 3.1	-1.7	(9.2) to 5.5	0.1	1.2
Carolina Wren	1	14.8	3.0 to 44.5	12.8	(11.7) to 37.3	12.8	1.3
House Wren	3	-1.6	(2.4) to (0.6)	-1.4	(3.5) to 1.0	1.6	0
Winter Wren	3	0	(1.5) to 1.5	-7	(11.5) to (2.7)	-6.1	-3.3
Marsh Wren	1	-6.8	(15.0) to 1.0	-7	(18.4) to 5.0	8	1
Blue-gray Gnatcatcher	1	-14.7	(53.0) to 0.0	-15	(75.5) to 57.2	8.2	1.7
Golden-crowned Kinglet	2	0.3	(3.5) to 3.9	-12.1	(23.0) to (1.6)	-1.5	-1.8
Ruby-crowned Kinglet	2	-1.8	(4.5) to 0.8	-2.1	(10.5) to 7.5	-5.2	3
Eastern Bluebird	2	0.9	(1.1) to 2.9	2.2	(5.0) to 9.7	-0.2	2
Veery	3	-1.6	(2.2) to (1.0)	-1.5	(3.1) to 0.3	-2.6	-1.5
Swainson's Thrush	2	1.6	(0.1) to 3.1	1.7	(2.6) to 8.2	-1.7	0.5
Hermit Thrush	3	1.8	0.4 to 3.2	-0.3	(4.2) to 3.7	-0.7	1
Wood Thrush	3	-4.4	(5.0) to (3.7)	-4.9	(6.9) to (2.8)	-5.9	-1.8
American Robin	3	-0.8	(1.2) to (0.5)	-0.8	(1.9) to 0.3	-1.2	0.4
Gray Catbird	3	-1.5	(2.0) to (0.9)	-1.4	(2.8) to 0.0	-2.2	0.6
Northern Mockingbird	3	2.9	0.5 to 5.5	-5.2	(11.2) to 1.1	-2.1	0
Brown Thrasher	2	-8.7	(10.3) to (7.0)	-9.1	(16.0) to (1.9)	-3.2	-0.6
European Starling	3	-3.9	(4.7) to (3.0)	-3.6	(5.9) to (1.0)	-3.1	-0.7
Cedar Waxwing	3	-0.3	(1.4) to 0.9	0	(2.1) to 2.3	0.4	1.7
Ovenbird	3	0.6	0.1 to 1.0	0.4	(0.8) to 1.7	0.3	0.4
Louisiana Waterthrush	1	-0.2	(3.1) to 3.2	3.2	(4.9) to 14.9	-1.9	1.8
Northern Waterthrush	3	-3	(4.5) to (1.6)	-3.1	(6.7) to 0.2	-1.9	0.4
Golden-winged Warbler	1	-6.3	(35.7) to 19.9	-6.3	(75.0) to 177.9	-7.4	0.3
Blue-winged Warbler	1	3.1	(0.9) to 7.5	2.8	(7.7) to 11.5	-3.6	0.5
Black-and-white Warbler	3	-1.9	(2.6) to (1.1)	-2.7	(4.8) to (0.9)	-2.6	-0.4

		Credibility		Credibility		Atl. No. Forest	All U. S.
	Credibility Measure	1966-2009	Range 1966-2009	1999-2009	Range 1999-2009	1999-2009	1999-2009
Tennessee Warbler	1	-3.7	(9.9) to 1.8	-4.2	(22.3) to 8.0	-5.2	4.3
Nashville Warbler	3	-3	(4.3) to (1.7)	-2.6	(6.4) to 1.4	1.3	1
Mourning Warbler	2	-1.4	(5.0) to 2.1	5	(7.1) to 20.7	-3	-0.3
Common Yellowthroat	3	-1	(1.5) to (0.6)	-1	(1.8) to 0.0	-1.3	-1
American Redstart	3	-3.3	(4.0) to (2.6)	-3.3	(4.9) to (1.5)	-1.7	-0.4
Cape May Warbler	1	-7.1	(11.2) to (2.8)	-7.3	(14.5) to 1.0	-1.3	-0.5
Northern Parula	2	4.2	2.9 to 5.6	4.6	2.0 to 8.0	2.7	1.3
Magnolia Warbler	3	0.2	(1.0) to 1.3	0.2	(2.2) to 2.6	1.1	-0.1
Bay-breasted Warbler	2	-5.6	(8.5) to (2.7)	-5.6	(10.4) to 0.1	-2.1	-2.4
Blackburnian Warbler	3	-1.2	(2.4) to (0.1)	-1	(3.2) to 1.6	1.8	1
Yellow Warbler	3	-1	(1.9) to (0.2)	-1.5	(4.0) to 0.8	-1.1	-0.2
Chestnut-sided Warbler	3	-1.8	(2.6) to (1.1)	2.8	0.0 to 5.9	0.6	-0.1
Blackpoll Warbler	2	-6.6	(11.1) to (1.7)	-7.5	(18.4) to 1.2	-2.6	-7.5
Black-throated Blue Warbler	3	1.6	0.5 to 2.8	2	(0.2) to 4.9	2	1.1
Pine Warbler	3	6.5	5.0 to 8.0	5.8	2.4 to 8.6	6.3	0.6
Yellow-rumped (Myrtle)							
Warbler	3	1.4	0.3 to 2.6	-1.5	(5.0) to 1.7	-1.3	0.4
Prairie Warbler	2	2.4	(0.5) to 5.4	4.2	(1.9) to 10.4	3.7	-1.2
Black-throated Green Warbler	3	1.6	0.4 to 2.8	0.3	(2.9) to 3.4	0.2	0.3
Canada Warbler	3	-5.2	(6.8) to (3.8)	-5.1	(9.2) to (1.0)	-3.7	-1.9
Wilson's Warbler	1	-5	(10.4) to 0.3	19.4	(9.6) to 77.5	-2.8	-1.5
Eastern Towhee	3	-9.6	(10.6) to (8.5)	-11.1	(14.7) to (7.7)	-8.6	-0.7
Chipping Sparrow	3	1.5	0.9 to 2.0	1.4	0.2 to 2.6	0	1
Field Sparrow	2	-8.4	(9.8) to (7.0)	-8.7	(13.3) to (4.0)	-5.9	-1.7
Vesper Sparrow	1	-16.2	(22.1) to (10.7)	-16.8	(29.0) to (3.7)	-3.4	-0.3
Savannah Sparrow	3	-0.5	(1.9) to 0.9	-0.7	(3.3) to 1.5	-3	-1.8
Grasshopper Sparrow	1	-2.4	(11.6) to 7.6	-2.2	(24.4) to 29.2	-5.5	-2.2
Song Sparrow	3	-1.4	(1.9) to (0.9)	-1.3	(2.9) to 0.4	-0.7	-0.6
Lincoln's Sparrow	2	2	(0.5) to 4.8	2.2	(2.0) to 8.2	-2.7	3.2
Swamp Sparrow	3	0.9	(0.2) to 1.9	1.4	(0.6) to 3.9	0.7	0.7
White-throated Sparrow	3	-3.3	(4.0) to (2.6)	-4.4	(6.8) to (2.1)	-2.8	-1.2
Dark-eyed Junco	3	-2.1	(3.4) to (0.7)	-2.3	(5.8) to 1.2	-4	-1.1
Scarlet Tanager	3	-1.3	(2.1) to (0.4)	-2	(4.5) to 0.4	-1.5	0.4
Northern Cardinal	3	9.8	8.2 to 11.5	4.8	1.2 to 8.2	4.6	0.7
Rose-breasted Grosbeak	3	-1.6	(2.8) to (0.4)	-0.7	(4.0) to 3.0	-2.1	0.2
Indigo Bunting	3	1.8	0.7 to 2.8	6.4	2.9 to 10.2	0	-0.5
Bobolink	3	-1.6	(2.4) to (0.7)	-2	(4.7) to 0.2	-3.3	0.3
Red-winged Blackbird	3	-0.8	(1.3) to (0.2)	-1	(2.4) to 0.4	-1.8	-1
Eastern Meadowlark	2	-7.6	(8.9) to (6.4)	-7.9	(10.9) to (5.5)	-7.5	-2.2
Rusty Blackbird	1	-9.2	(15.4) to (3.5)	-9.8	(24.2) to (0.5)	-4.1	-0.2
Common Grackle	3	-1.7	(2.5) to (0.8)	-3.3	(6.2) to (0.6)	-1.9	-1.3
Brown-headed Cowbird	3	-3.1	(4.1) to (2.2)	-3.2	(5.7) to (1.2)	-6.4	-0.2
Baltimore Oriole	3	-1	(2.0) to 0.0	-1.4	(4.2) to 1.5	-1.7	0
Purple Finch	3	-3.1	(4.1) to (2.1)	-3.1	(5.0) to (1.3)	-0.3	-0.3
House Finch	1	11.9	6.3 to 19.4	-5.7	(12.5) to 1.9	-11.2	-0.7
Red Crossbill	1	-6.6	(21.0) to 8.1	-7.7	(53.1) to 72.7	-2.7	-2.3
Pine Siskin	1	0.9	(4.1) to 6.1	-11.3	(27.1) to 6.8	-15.9	-0.9
American Goldfinch	3	0.8	(0.1) to 1.7	0.2	(2.3) to 2.6	-0.8	-0.4
Evening Grosbeak	2	5.7	1.4 to 10.2	-12.5	(23.2) to (1.0)	-14.8	-6.1
House Sparrow	3	-1.8	(3.0) to (0.6)	-1.6	(4.4) to 0.7	-6.6	-3.5

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